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THE

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ART. I.—*Thoughts on the Tongue as an element in Diagnosis.* By JOHN DAWSON, M.D., of Jamestown, Ohio.

Our intention in this paper is to offer some thoughts on the *Tongue as an Element of Diagnosis.* For centuries the appearances of this organ have been consulted as being of great utility in indicating the character of diseases general and local. The ancient authors, to whom we have had access, have left sufficient upon record to show the high estimation in which its different appearances were regarded by them. By the schools of Abernethy and Broussais the value of these morbid appearances have, perhaps, been overrated. Both of these eminent men, and their followers, regard the tongue as reflecting the exact morbid condition of the alimentary canal. As we shall subsequently see, this position will have to be classed among the things that are obsolete. It should not,

however, be supposed from this that the appearances of the tongue are not among the most available means we possess of arriving at a correct knowledge of many pathological states of the system. There are some things that may be known by their inspection, and there are other things that require the consultation of all the phenomena presented; and even then, much as the scope has been enlarged by the labor of modern times, it is still, in many instances, too limited for accurate diagnosis.

We may know, as a general rule, that the system is in a state of disease by the appearance of the tongue, but the *kind* and *character* of the disease can often only be ascertained by reference to other and more available signs.

In order to present some views on the subject before us, we will in the first place give the result of our own observations on the changes which the tongue has undergone in some of the diseases of the general system which we have been called upon to treat; also on the changes it has undergone in diseases of particular organs, tissues, &c.; and in the last place, offer some suggestions on the import of these several morbid appearances.

Among the general diseases giving rise to modifications in the appearance of the tongue, because of the frequency of its occurrence, we have paid the most attention to fever. All varieties of what are generally termed idiopathic fever have exhibited morbid appearances in greater or less perfection.

In the *synochus* fever of British and Continental writers, usually in this country termed *remittent*, the tongue has pretty constantly been more or less altered in appearance. Altogether the most constant change that we have observed has been in relation to its surface. A great proportion of the cases have shown this to be coated *white* at the beginning of the malady. After continuing for a while the coat has amounted to what is generally termed load. At the commencement the coat has usually been so light as not to cover up entirely the papillæ; and, as a consequence from this circumstance, not less, perhaps, than from a hypertrophied

condition, the papillæ have commonly exhibited a protruded appearance. Sometimes this has continued during the whole course of the complaint; but oftener, by the upper surface becoming loaded, the papillæ have been concealed. By a number of circumstances the white color has been varied. The continuance of the disorder for any length of time, by which the secretions from the mouth had become vitiated, have given rise to a dirty, and in some instances, a brownish appearance of the coat. When, also, at any period during the course the liver has been implicated it has happened that the coat or load partook more or less of the icteroid hue common to other parts of the system. This, however, has only been occasionally the case in what is called epidemic bilious fever; for I have witnessed a majority of cases of bilious fever during the past autumn when the complaint was epidemic, in which the diffusion of bilious matter through the system, so as to color the tongue, skin, and eyes, was not present. To some extent, we think, the coat of the tongue has been varied in color by the nature of the remote cause. A few cases were observed that from the beginning were characterized with a high grade of vascular excitement, urgent thirst, a hot and dry skin. In such the tongue, although very white at first, very soon became brown and dry, and in some instances black. Besides, the changes of color referable to the coat, the proper substance of the organ itself underwent some important modifications. In these cases characterized by strong febrile excitement, the tongue was pretty constantly red on its edges, under surface, and apex. Milder grades of excitement were attended with a pale, in some instances, a livid appearance, which continued during the whole course, unless inflammation of some important organ supervened. Great redness of the tongue at the commencement of the disease was usually found associated with a vigorous, robust system, and much functional energy; while the pale appearance was found in connexion with an effeminate condition of the general system or broken down constitution. The fever generally denominated remittent has pre-

vailed in this locality a few years past, and almost every case of which was attended with but a very mild grade of febrile excitement, scarcely any thirst, and not much heat or dryness of the skin. In such cases the tongue, at first, was nearly normal, perhaps paler than in health, and often continued in this condition during the course. Some of these cases were very protracted, and in the latter stages gave evidence of disease of the Peyerian glands. When this happened the tongue became redder, more granulated, and exhibited a tendency to dryness. The condition of the tongue in the complaint before us, so far as dryness or moisture was concerned, depended upon several circumstances. As soon as the malady was completely developed patients generally complained more or less of dryness in the mouth, tongue, and fauces. On inspection, nothing in the majority of cases could be observed adequate to account for such a sensation. From the beginning there were cases, nevertheless, in which there was a predisposition to visible dryness. We witnessed an example of this kind in a man aged about 40 years. He was taken in autumn with bilious fever, and was sick a few days before we saw him. On the first inspection his tongue was observed to be remarkably dry, somewhat chapped, and the coat on it had rather the color of mahogany. We looked upon this appearance in connexion with other phenomena present, as ominous of a fatal issue, and such proved to be the result. He was put on mercurials and other means addressed to what was supposed to be gastro-intestinal irritation of a high order, but without any success, for the dryness of the tongue and inside of the mouth increased, the brain became implicated, and he expired. An intelligent practitioner, a short time since, related to me a case supposed to be malignant intermittent, or what is more properly termed congestive fever, in which the tongue was remarkably dry. This case was put on mercurials, and under their use the tongue became moist and assumed a very favorable appearance. The patient, nevertheless, died in a state of profound coma shortly after the favorable alteration occurred.

We witnessed the case of a lady of middle age taken with the premonitory symptoms of bilious fever. On the third or fourth day of her illness we saw her for the first time. On its being examined, the tongue, at this period, was found to be extremely red, perfectly clean, as smooth on its upper surface as if it had been varnished, with considerable tendency to become dry. Associated with these phenomena there were tenderness in the epigastrium, thirst, and dysenteric discharges from the bowels. The tendency to dryness in this case continued for about twenty days, though the tongue at no time became chapped. The patient recovered under the use of medicines prescribed for an irritated condition of the bowels.

Alterations relating to the form of the tongue have so seldom been well defined in the complaint of which we have been speaking, that we can say but little concerning them. We are inclined to think that the organ has seldom, if ever been swollen, but in a few cases, on the contrary, rather contracted and pointed. It is true that we have seen a number of cases in which the organ appeared flabby and pale, but upon inquiry, such appearances could always be traced to some fault in the constitution—dyspepsia, or to something else having a tendency to impair the nutritive function.

Enlarged and elongated papillæ have been observed very frequently, at the commencement of the disease, protruding through the coat and imparting to the tongue the appearance elementary writers usually assign to it in scarlatina. As the disease progressed the papillæ on the surface became covered up by the coat, but those on the apex and edges continued to enlarge, giving rise to a granulated appearance. In pretty much all the cases characterized by this modification of the papillæ there was a great tendency to prostration. When not subdued very early, the affection became complicated with diarrhœa, epigastric tenderness, in some instances, meteorism, coma, and other typhoid symptoms.

The motions of the tongue have not been so strikingly characterized in this as in cases we have witnessed of typhus. When dry and chapped, patients have complained of being unable to control its motions; and when requested to protrude it have expressed their inability to do so. Very much debilitated with the continuance of the disease upon them for a considerable length of time, patients have complained of inability to protrude the tongue, and when insisted upon to pass it over the teeth for inspection, the organ appeared tremulous. We have noticed a few cases of this kind in which the organ from lying against the teeth had become indented. We will now give a sketch of our observations of the

Condition of the tongue in epidemic typhus fever.—This fever has prevailed several times in this region as an epidemic. In most of the cases, the tongue, during the period of incubation, which generally lasted from one to two weeks, presented rather an exsanguineous appearance, was slightly coated, and attended with no perceivable change of form. As the disease progressed it was usual for the color to change to a brighter red, for the coat to increase in thickness, and also for the coat to become discolored, becoming brown in some cases, in others almost black. As a general rule the papillæ were more or less enlarged, protruding through the coat when it was thin, and giving rise to a granulated appearance on the edges and apex. When the complaint was of considerable duration, the coat increased in thickness to the degree generally entitled load. This in some instances continued during the whole period of the complaint; in other instances, by the epithelium becoming detached, it sloughed off in flakes leaving the surface under it red and very tender. The tendency to dryness was exhibited in but very few cases; and invariably these were characterized by evidence of a high degree of gastric and intestinal irritation. Commonly the motions of the tongue were unimpaired. In a few cases, very much debilitated by the great duration of

the malady, patients were inclined to speak only a word or two at a time, and with long intervals between them; and when asked to protrude the tongue, they would express an inability to do so. On witnessing two or three epidemics of typhus, we saw no case, in which from the commencement, the tongue was black. This phenomenon occurred only in the advanced stages and like persistent dryness, it was generally followed by a fatal issue.

The condition of the tongue in diseases strictly inflammatory has of late been made the subject of extensive clinical research. This class, comprehensive enough in the estimation of some to supersede the necessity of all other branches of nomenclature, is characterized with such a diversity in the character of the symptoms generally, and also in the morbid appearances of the tongue, that it is very difficult to give the condition of this organ with any degree of precision.

Inflammation resulting from fractures and extensive injuries of the soft parts, we have constantly observed, have been attended with a white coat. While this phenomenon has universally been present, the appearances in other respects have varied according to the intensity of the affection, nature of the organ or tissue involved, diathesis of the patient, &c.

Injuries of the osseous tissues and soft parts contiguous, when extensive, have, without a single exception, been immediately followed with a coated tongue, the coat always very white at first. Attended with a high fever, the tongue in some instances has been disposed to dryness, and in cases of slow recovery, to a red or granulated state of its edges.

Acute inflammation of any of the more important organs of the body, as far as we have observed, has been connected with a morbid state of the tongue, which varied according to circumstances. As a general rule, during the first stages, the tongue was coated; after this period, if the complaint proved stubborn, other changes occurred, such as the upper surface becoming loaded, brown, or perhaps dry and chapped.

We observed in a case of inflammation of the mucous surface of the bowels, proceeding as we supposed from malaria,

that the tongue after being coated turned brown and ultimately became dry and almost black. We have also witnessed an acute inflammation of the mucous surface of the stomach associated with delirium tremens, that had associated with it dryness of the tongue and entire inside of the mouth. Both of these cases terminated fatally.

In subacute or chronic inflammation, the tongue, as in the acute form of the disease, had been generally coated, sometimes pale, and we have noticed a few cases in which it was flabby during the whole course of the complaint. Protrusion of the papillæ has been of no unfrequent occurrence here; and we have seen some cases in which the organ was fissured and lobulated.

To a considerable extent the tongue has been varied by the duration of the inflammatory attack. In cases where the affection ran its course rapidly the tongue has exhibited a tendency to become dry and chapped. On the contrary, in cases of a protracted character, it has been more apt to become loaded, foul, and more or less discolored. By the nature of the tissue or organ affected with inflammatory action, the appearances have been modified. In glossitis we are told by elementary writers that the tongue soon becomes red, hot, and dry. Its form is almost immediately altered, being at times so much hypertrophied as to fill up the entire cavity of the mouth.

As we witnessed a case of glossitis in connexion with epidemic erysipelas that was strongly characterized, we will transcribe a brief account of it from the Western Journal of Medicine and Surgery in which it was published in August last. The subject of it was a man of strong constitution, plethoric habit, and 46 years of age. On the 4th of May last he was taken with the symptoms of epidemic erysipelas; on the 8th, for the first time, he commenced complaining of his tonge. It presented on examination at this period a healthy appearance, except that it was slightly coated and the papillæ somewhat enlarged. On the 9th it was painful, and considerably enlarged, though not altered in color. At this time

the secretions from it and the salivary glands, were abundant. It continued to enlarge on the 10th, and on the 11th it had attained a size sufficient to fill the entire cavity of the mouth, and protruded for some distance between the teeth, from which circumstance the patient's jaws were forced apart, and he became unable to articulate. At this period its color was redder than formerly, though it still continued moist, and its upper surface was very heavily loaded. It had been scarified on the 9th, and from these places there issued a thick dense layer of coagulable lymph or false membrane. On the 13th, the swelling began to subside, and the surface to clean off. Although the complaint with which this condition of the tongue was connected, was provincially termed black-tongue we saw but this one instance in which the organ was prominently affected. Nor have our researches, concerning the observations of others, justified those revolting rumors about the prevalence of black-tongue with which our country twelve months ago was so rife. The tongue in the complaint of which we have been speaking was usually white at the commencement, becoming, as the complaint progressed, loaded, foul, or discolored, according to the severity, duration, &c.; and in one case that we attended it was found to be dry on the first day of the disease.

Inflammation of the dermoid tissue, such for example as obtains in exanthematous affections, has presented some peculiarities that deserve a passing notice. In scarlatina the tongue has been redder than in most other complaints, generally coated, and in perhaps one-half of the cases which we have seen there has been an elongation of the papillæ, and a protrusion of them through the coat. This latter condition, we are aware, has been given by most elementary writers as a diagnostic of scarlatina. In this respect, however, it is entitled to no confidence; for it is a very common appearance in children, it matters not with what disease they are affected; and it is also present in a number of diseases to which adults are subject besides scarlatina. Last season we

witnessed a case of scarlatina in which the tongue was perfectly clean, of a fiery red color, and as smooth as if it had been glazed, with some tendency to dryness. At the commencement, this condition was present, and continued until convalescence, without being associated with any lesion more than what is common to scarlatina, except a slight diarrhœa. The tongue in rubeola has exhibited nothing interesting or peculiar. Generally it was furred at first, followed by other appearances corresponding to the intensity, duration, &c., of the complaint.

The serous and mucous membranes, when the seat of inflammation, have been attended with nothing entitled to the consideration of a characteristic. A coated tongue has usually been present in both classes of disease, followed by other phenomena corresponding to the grade of excitement, form of the complaint, or idiosyncrasy of the patient. In cases of acute inflammation of the meninges, of the peritoneum, or of the pleura, the tongue has been disposed to become loaded, or dry. The same has been true of the state of this organ in acute inflammation of the mucous membranes. In chronic inflammation of the alimentary canal giving rise to diarrhœa, dyspepsia, &c., the tongue has been often pale, flabby, sometimes broader than natural, and always more or less coated. About the same condition has attended it in the same form of disease in the serous membranes.

Chlorosis, as far as we have observed it, has been attended with certain modifications of the tongue that are, perhaps, characteristic. Of the pallid appearance of the general complexion it has very intimately partaken. Always indeed on witnessing the exsanguineous state of the countenance, the same was observable on the tongue. Not constantly, but pretty frequently, in addition to the paleness there have also been tumefactions, occasionally fissures; once in a while the organ has been indented. It has not been common to see it much loaded, still it has been usually coated. In many cases

the papillæ have been almost entirely obliterated, giving to the organ an unnaturally smooth appearance.

In diseases of the nervous system the tongue has varied but little from what we have described as being its condition in chlorosis. Perhaps the only real difference was that the phenomena in the latter disease were more permanently and decidedly marked. A thin coat, with paleness, connected at times with a flabby, indented, fissured, or sulcated condition, has been usually present as characteristics of this class of diseases. Persons laboring under what might be termed a nervous diathesis, have had these phenomena most strongly marked.

Having given briefly our experience in some of the more important classes of diseases we will now offer some few thoughts on

The import of the different appearances of the Tongue.—Much of the confidence reposed in the different appearances of the tongue, as indicative of certain kinds or grades of diseased action is, by the intelligent part of the profession, about to be suspended. It has been well settled by modern research, that the schools of Broussais and Abernethy are wrong in stating that the tongue will point out the exact state of the alimentary canal. Failing here, where from the similarity of the tissues, and intimate sympathetic relations, it could be most reasonably expected to reflect every change that might occur, of course, its indications concerning diseased actions more remote, and less intimately connected with it, must be regarded as being exceedingly equivocal. It may therefore be taken as a settled position, that, although the state of the tongue is entitled to great consideration as an index to the condition of the general system, yet in order to be entitled to confidence in making out the character or kind of disease, its appearances must coincide with other symptoms.

Before attempting to discuss the import of the different morbid appearances, it will, perhaps, not be out of place to

notice the fact that a healthy condition of the organ may exist, and yet, certain parts of the system be the seat of serious disease. The connexion between the state of the tongue, and that of the stomach, has been lately made the subject of extensive clinical observation by Andral and other eminent pathologists. Andral tells us that "we may have a diseased stomach with a healthful condition of the tongue." Speaking of chronic gastritis he says—"The tongue in this affection is far from presenting always the same appearance. First there is a certain number of cases in which it does not at all deviate from its normal state; and what is remarkable this happens precisely in those cases where the stomach has become the seat of the most serious organic alterations. It is principally in fact in cases of cancerous degeneration of the stomach that we have had an opportunity of observing this continuance of the tongue in its normal state." Louis, in giving an account of the gastritis which accompanies fever, states that in many of the worst cases the tongue was natural.

On the contrary, it should be remembered that we may have a diseased condition of the tongue, or rather an appearance of the tongue indicative of disease general, or local, when at the same time the general health is but little or perhaps not at all deranged. In relation to this point, Andral tells us, that "we may have a diseased appearance of the tongue with a healthful state of the stomach." In his last edition of his own and Stokes's Lectures on the Practice of Medicine, Dr. Bell alludes to the case of a person that he knew, who, for twenty-five years never had an entirely clean tongue. On waking every morning this individual would find his tongue dry, fevered, yellow, and often brown; and sometimes giving out a little blood mixed with saliva. Occasionally it resembled that of a patient in the advanced stage of typhoid fever. Yet notwithstanding these appearances the individual "was seldom laid up by sickness." Billings proposes a caution against mistaking a white appearance of

Medical Gallery.—The Medico-Chirurgical Review, for July, contains a notice of a work by Reveillé-Parise, one of the chapters of which presents, among many others, a sketch of the life and character of the great French surgeon Dupuytren, which we are sure will be read with pleasure.

The determined and overbearing character of this celebrated surgeon manifested itself from the very commencement of his career. When, at seventeen years of age, he was appointed one of the Demonstrators at l'Ecole de Medicine, his poverty was so great that he was obliged to mend his own clothes. So far from despairing, however, he had such a complete conviction of his own superiority, and presentiment of its successful exertion, that he had already in view the surgical dictatorship which he afterwards attained. The renown of Bichat was a source of continual vexation to him, and upon hearing of his death, he exclaimed, "I begin to breathe." From this period, too, his reputation began to increase rapidly.

Knowledge, judgment, indefatigable industry, untiring patience, address, energy, and resolution, were all employed by him in the manner characteristic of a man who is determined to succeed—one who is never at ease but at the head of the crowd, who proceeds straight to the end in view, in spite of all the obstacles and difficulties of rivalry. This is in fact the period at which Dupuytren really worked, when he amassed most of his scientific labors, although it was long before he reached his eventual eminence. There was then to be observed in him the decided desire of increasing the riches of science, of extending its limits, united with that burning ambition which destroys rest, and which is the foundation of that strength which characterizes the man impatient of all control and jealous of every influence.

His avowed determination in 1812, to obtain the professorship held by Sabatier in l'Ecole de Medicine raised him numerous enemies and opponents; but he triumphed over all, in spite of an evident desire of the judges to favor some of these. Nothing now impeded his progress.

Arrived at the apogee of his renown, the genius of Dupuytren was quite equal to his position; and he was enabled to struggle with the torrent of occupations by which he was surrounded. There was indeed something really gigantic in that intelligence which provided for everything by its pro-

digious activity, indefatigable industry, determined arduor, and by a sort of ubiquity which allowed him to accomplish as well as to desire everything. For twenty years he was always one of the earliest at the Hôtel Dieu, however inclement the season. He passed more than five hours there in the severest bodily and mental exertion. No sooner had he left these, than new duties and crowds of patients called him to all parts. * * * * * Whoever wishes to give unrestricted praise to Dupuytren, must consider him in his professor's chair. There he triumphed—there he excelled. It was a remarkable thing to hear this illustrious surgeon delivering his beautiful lectures on Clinical Surgery, amidst three or four hundred silent and attentive pupils. With what order and method he enchained the attention of his auditors! how accomplished was he in instructing them, exhibiting the light of evidence with a skilful and vigorous logic, and inculcating good and sound information! His clear, calm, strong delivery, lucid and expressive, fluent, easy without prolixity, elegant without effort, always fortified by things and facts; the clearness of his views; his rare talent for exposition and deduction; his astonishing facility in defining, classifying, and expressing his ideas, in rendering objects sensible and evident, and in arresting, fixing, and directing the attention, gave to his lectures a singular attraction. No idle detail, declamation, or ornament was there: all was clear, precise, intelligible; all tended to fact, to its object, and to instruction. * * * * * * * Nevertheless, the pupils sometimes reproached the professor with dwelling only with predilection upon those cases in which success had crowned his efforts, and disguising his reverses with skill. Another, and perhaps better-founded, reproach is, that this illustrious professor never quoted any one else, and French surgeons still less than any. To speak the truth, he had a marked and exclusive disdain for all that had not proceeded from himself; and this indifference, or rather scepticism for everything and everybody, when the talent of his rivals was in question, had its root in his naturally haughty character—completely despising the opinions of others—those of the past as useless, and those of the present as inferior.

What I have said of the professor exhibits his qualities as a surgeon. It is allowed by all that Dupuytren was the most remarkable man in the profession of his epoch. Few have possessed that vast and rare assemblage of qualities which constitute a great surgeon. He had especially an ad-

mirable strength of judgment, which rendered his diagnosis so true and affirmatory, that it struck every one with astonishment. Moreover, in the observation and application of precepts, there was an exactness of analysis, a certainty of practical good sense, and a depth of examination, which are certainly rare. Although bold, without the least trace of pusillanimity, he never operated until the last moment, when he was certain that this furnished the last resource of art. * * * * * * Arrived at the height of his reputation, Dupuytren desired to be not the chief but the tyrant of French surgery; and the most exclusive and bitter individuality dominated his entire being, dictated his thoughts and governed his actions. So, in his social relations, he much preferred unexacting friendships and passive unconditional devotion.

Justice obliges us to add, that the high faculties of this great surgeon were not those which may be termed transmissible. He had not a genius for discovery, but for application. This leaves but little harvest for succeeding generations to reap. From such great talent and renown one would expect an imposing succession of works which would add to the acquirements of science, and long leave their traces there. Alas! what remains to us of Dupuytren, what his biographers will carefully collect, is not to be compared with that which we had a right to hope for. It is this which has given rise to the saying that, after all, this great man was only a famous man. * * * * * * In studying this celebrated surgeon with care, we may, to a certain extent, explain this defect of accordance between his labors and talent, and the insignificant amount of results. He possessed much more of the talent for teaching, and all that required the aid of speech and action, than for slow, continuous labor. Next, he had embraced the whole circle of surgery. He was not one of those who devote their lives to the production and realization of an idea. He wished to know and distinguish himself in every part of the profession, whence it resulted that he only contributed here and there to the progress of some portions of surgery. Add to this, that desirous of becoming the first in all, he wished to accomplish this by the aid of a large fortune, and amassing this occupied him incessantly, especially as this was a natural bent of his disposition.

A lofty pride seemed to have been his distinguishing feature, which accompanied him in every act and word, and the inordinate ambition hence arising doubtless was one of the causes of his merit and renown. To serve his ambition,

however, he would condescend to almost any meanness and duplicity, so as to impart to his character, observed for any length of time, the most strange contrasts. When his object was to be answered by it, it was painful to see "the insinuating air, the wheedling suppleness of so proud and irritable a man." He was surrounded by flatterers, but he was also exceedingly susceptible to the attacks and criticisms his own disdainful conduct provoked.

Criticism irritated him as an injury, while blame tormented him as an intolerable novelty. Admirers and acquaintances he had, but few or no friends, and found the surgical crown, like others, was not without its thorns. His genius, talent, and dignities were envied, but no one was ignorant that beneath this brilliant surface were anguish and chagrin. He was looked upon as a sort of power whom one must prevent from becoming an enemy, but with the impossibility of ever becoming his friend. Every one stretched a hand to him, but no one shook his cordially. He was at once admired, feared, and blamed—a singular destiny for a man of such incontestible superiority. Let us add that, like other proud, susceptible, and irritable beings, he was unequal and changeable. Literally, to use the vulgar expression, one did not know which end to lay hold of him by. He did good and evil by starts and caprice. If, in some cases, he might be taxed with falsehood and harshness, in others he exhibited an exemplary loyalty and unheard of disinterestedness.

* * * * * * *

With all his affectation of simplicity he coveted scientific distinctions, and was especially fond of his title of *Baron*. Probably from the obstacles to his progress which he found his poverty to offer in early life, he acquired an insatiable love for money, and became immensely rich. Having heard that Astley Cooper possessessed six millions of francs he would never rest until he had accumulated the like sum. To this end he sacrificed all the the time that might have been devoted to the advancement of science; and even his Clinical Lectures would not have been preserved but for the care of some of the auditors. Dupuytren himself published nothing, except a wretched letter in the newspapers of 1832, announcing decoction of poppy-heads a cure for the cholera! His riches, however, brought no satisfaction, but only the desire to add to them; he was not organized for happiness and never possessed it. He died aged 58. His will, M. Parise says, does high honor to him, but he does not state its dispositions.

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NEW SERIES.—VOL. VI.—NO. III.

LOUISVILLE, SEPTEMBER 1, 1846.

FOREIGN CORRESPONDENCE.

We would direct the attention of our readers to the second letter, contained in this number, of our foreign correspondent, Dr. David W. Yandell, a graduate of the University of Louisville, and the son of one of our collaborators. We have read it with pleasure, and think that all who turn to it will peruse it with interest. The author is evidently wide awake to the novel medical world, to which he has transferred himself from the backwoods, and is laudably disposed to make his observations available to the friends and fellow-students he has left behind. Our chief object in the present notice, however, is to say that the author will spend a couple of years in the great *emporia* of medical science, in England, Scotland, Ireland, France, and Germany, and that we have engaged him to furnish us regularly with communications for the Journal. Thus we may venture to promise one for every number, and cannot doubt, that they will become more and more interesting, in proportion as his opportunities for observation multiply. In this way we shall be able to put our readers in possession of the earliest European intelligence, including many things which might not reach them through the journals from that country. D.

HEALTH OF LOUISVILLE.

The Sexton reported the interments in Louisville during the last two weeks in July to have been adults 13, infants 20; and during the firt two weeks of August, adults 12, infants 13; total 57 in the month. Considering that this is in the sickly season, it must be admitted that the report exhibits an excellent state of health in this city. Much sickness has prevailed in certain localities—in all the suburbs, in fact—but it has been sickness of a mild form, chiefly intermittent fever. Cholera infantum has been prevalent, but the slight mortality among children proves that it has not been malignant. A full proportion of the infants died of convulsions, an unusual tendency to which we have remarked in children this season.

The convulsions were tetanic in their character. Can there be any connexion between them and the tropical weather, for which the summer just ended has been remarkable? It is not oftener than once in twenty years that such a season as the past is known in our latitude. The heat has been tropical, and the rains have fallen as they do in tropical regions. What will be the consequence of this high temperature and these floods of rain to the health of the city, in the two warm months yet to come, it is impossible to say. In former years, while the city was yet environed by extensive ponds, and large collections of putrid water stood in its streets, the most fatal fevers would have been expected; but Louisville has been now long exempt from such visitations, and, up the present date, it is certain that the extreme heat of the sun and the deluges of rain have not affected the salubrity of our atmosphere.

LOUISVILLE LAW SCHOOL.

The trustees of the Louisville University have wisely resolved to organize a Law Department, the professorships in which have been created and filled. The following gentlemen have been elected, to wit:

Hon. Henry Pirtle, LL.D., Professor of Constitutional Law, Equity and Equity Pleadings, and Commercial Law.

Garnet Duncan, Esq., Professor of the Science of Law, including the Common Law and its History, and the Laws of Nations.

Preston S. Loughborough, Esq., Professor of the Law of Real

Property, the Practice of Law, including Actions, Pleadings, and Evidence, and the Criminal Law.

These gentlemen are well known in all parts of our country as among the most able and learned jurists in our Commowealth, famed for the ability of its bar; and we congratulate our young countrymen of the law that the services of such teachers are henceforth to be at their command. Aside from their experience and legal erudition, the examples of dignity, probity, and purity afforded by the lives of these eminent men will be of incalculable value to their pupils. We predict for the Law department of the University of Louisville a rapid rise and prosperous career. The newly elected professors have made arrangements for opening the department in November, and a full course of lectures will be delivered during the approaching winter.

LOUISVILLE SUMMER SCHOOL.

The lectures in the Louisville Summer School of Medicine will commence on the first Monday in September and continue to the end of October. During the latter month the dissecting rooms will be open under the direction of the Demonstrator of Anatomy, Dr. Bayless. Sudents of medicine are earnestly advised to come on and embrace the admirable opportunity afforded by this arrangement for making themselves practical anatomists. Dr. Bayless conducts his department with singular success; his tables are always well supplied, and he has always large classes. No scarcity of material has ever been complained of by those who have taken his ticket, and the policy of the school is to encourage dissections. By an ordinance lately adopted, every student must take the dissecting ticket one season before he can present himself for his degree. The effect of the fall course of lectures and of throwing open the anatomical rooms to students in October, is to lengthen the lecture term more than a month. Students will see the advantage of this.

Errata.—In our last number, at page 141, in the formula for iodide of iron pills, "*iodide of*" occurs where it should be iodine. In the present number Mr. Walshe's name is incorrectly printed "Walsh."

FACTS FROM CORRESPONDENTS.

We make the following extracts from a letter for which we are indebted to R. A. Westbrook, M.D., of Oakland, Tennessee.

We have had a healthy spring and summer. The spring was cold and wet, and for a time bowel complaints of a mild character prevailed. At this time scarlatina may be said to be endemic in this region, and sporadic cases have been occurring for many weeks; the cases that have fallen in my way have been mild and easily controlled by remedial treatment, but a number have assumed a malignant type and terminated speedily in death. This, I believe, is characteristic of scarlet fever; in one instance so mild as to require no treatment; in another resisting all remedies, and terminating fatally in a few hours. Cholera is scarcely more rapid in its march than some cases of scarlatina; and again physicians will meet with a long succession of mild cases, and practise a whole season without losing a patient with this fever. Remittent fever made its appearance early in the summer and attained, during a spell of hot, dry weather, considerable prevalence, but we had several drenching rains a fortnight since, by which it has been checked. I do not learn that any new cases have occurred since. During all the season we have had occasional cases of intermittent fever. I remarked in the spring a tendency in the submaxillary glands to become inflamed and swollen from any slight injury of the system, and often without any assignable cause. Some weeks ago a catarrhal fever prevailed among children, and a number of cases proved fatal under the management of steam-doctors. One practitioner of this school lost three patients with this affection in eleven hours. He confined them to heated rooms, steamed them, and gave them lobelia till they died. He remarked to the friends that the "children could take as much lobelia as men." No other cases of this complaint had an unfavorable issue in this neighborhood, and the result in these, I suppose, is attributable to the barbarous practice pursued.

August 4th, 1846.

the tongue for an evidence of disease. Persons, he says, often on rising in the morning, look at their tongue, and finding it white, conclude that they are bilious and take physic. Such conclusions he assures us are generally erroneous; and the giving of a "*peristaltic persuader*" under such circumstances, he regards as being entirely unnecessary.

Lately we have examined the tongues of a number of persons in a state of health, and we found the appearances to be exceedingly diversified. In the case of a lady between 45 and 50 years of age, whose general health has always been remarkably good, and who was well at the time we made the examination, the tongue was as red as it usually is in acute gastritis, rather small, pointed, and very much fissured. In two other cases where the persons were in health the papillæ were very much enlarged, particularly at the upper ends of them, where they were of rather an umbelliferous form. In other instances the tongue was lobulated, sulcated, &c. Several cases we saw in which it was habitually furred without the conjunction of any inconvenience, other than that of a depraved taste of mornings.

It being now understood that serious disease may exist, of even the stomach itself, without being at all indicated by the tongue; and that morbid appearances of the tongue may coexist with a physiological exercise of the various functions, we will be better prepared to estimate the import of the different morbid appearances.

What does a white appearance of the tongue indicate? All know that in health the upper surface of the tongue is not of a bright red color. The tips of the villi being less injected with blood, than the lower parts, the tongue as a consequence, on its upper surface, is much paler than either the edges, tip, or under surface. This existing in conjunction with chlorosis might give rise to opinions that would be erroneous. Conjoined also with the exsanguineous condition common to some dyspeptics, or to females laboring under a nervous dia-

thesis, it might be calculated to mislead; for in both cases it would be partly the result of a physiological cause. According to the time of day at which it is examined the tongue varies in appearance; its upper surface is much whiter early in the morning than after breakfast, at noon than after dinner, and at the end of a long fast than after the stomach has been filled. In part, this results from the motion to which the organ is subjected in mastication and deglutition, by which a greater proportion of blood is invited into its substance; and also from the intimate sympathy there is between the tongue and stomach. A practice of taking cathartic medicines, epsom salts, aperient pills, and the like, obtains with some persons to an extent that creates a demand in the system for their habitual use. Of such persons the tongues, in nine cases out of ten, are coated white. Such an appearance is no evidence of disease, further than what might be supposed to result from the medicines acting on or irritating the mucous surface of the bowels.

After taking these things into consideration the white appearance of the tongue may be taken as an evidence that the system is some way or other out of order; and in connexion with other signs it will aid materially in making out the nature of the complaint. A very white appearance of the coat denotes that the disease is of recent origin, acute, and has rapidly invaded the system. This appearance is present in the commencement of acute inflammation, particularly inflammation of the bowels, in synochus fever of a high grade of arterial excitement; and in the epidemic erysipelas with which our country was recently visited; the coat in all the acute cases was at first of rather a snow-white appearance. A sallow white coat indicates a different grade of morbid excitement. It is the appearance most generally met with in typhus, dyspepsia, hypochondriasis, nervous diseases, chlorosis, and other diseases that consume considerable time in the period of incubation. Formed gradually, it's color is modified to some extent by the low grade of arterial excitement in the tongue and by the vitiated secretions of the mouth.

There is another modification of the white coat which is generally regarded as a diagnostic of biliary derangement. I allude to the yellowish white found in jaundice, in what is generally called bilious fevers, and in yellow fever. When this appearance is present in conjunction with other symptoms, it may be of some importance in assisting to ferret out the condition of the liver; but in most of the cases that we witnessed of a late epidemic of bilious or malarial fever the tongue exhibited no such phenomenon. The brown tongue is a modification of the white altered by the long continued presence of bilious matter, and by the depraved secretions of the mouth. Its presence, when connected with a tendency to dryness, as far as we have observed it, may be taken as an evidence that the disease, whatever be its character, has been of considerable duration, and is persistent in its course. Often the white coat accumulates to an extent that entitles it to the name of load. The import of a loaded tongue can seldom ever be misunderstood. To be formed it requires a considerable length of time, and of course, is evidence that the disease has been of considerable duration.

What do the different colors of the tongue indicate? Always it should be remembered, that the natural color of the tongue, as previously remarked, varies in different individuals. In those of a sanguine temperament, enjoying vigorous, robust health, it could not be expected to be of the same hue as in one of a lymphatic temperament, with a weak constitution and effeminate habits. In the former it would exhibit a very red healthy appearance; in the latter it would most likely be pale, blue, exsanguineous. Besides, any one who will take the trouble to examine a number of healthy tongues will find the shades of color as much diversified as are the complexions of the individuals examined. When not the result of the circumstances to which we have alluded, a red tongue may be regarded as a sign of disease general or local. In acute inflammation of the stomach or bowels, in high grades of febrile excitement, idiopathic or symptomatic, we

generally have, in all parts of the tongue not covered with the coat, a very red appearance. As a consequence, this appearance, when coexisting with the original onset of the malady, or making its appearance during the course, is generally, and we believe in the majority of cases correctly, interpreted to signify, either primary acute disease of the stomach and bowels, or disease of some organ between which and the bowels there is a very intimate relation. A very red tongue, without being accompanied with any coat or load, would seem to augur the worst issue. Such however has not been verified by our experience. In all the instances of such a tongue, coming under our observation, the sequel of the complaint has been characterized by consequences of no worse character than attended a red tongue with coat or load. The tongue may be red with a clean smooth appearance, as though it were glazed, or it may be red and granulated. The former we have noticed as an original appearance in scarlatina and typhus, but it is oftener developed during the progress of the disease by some circumstance that removes the coat; the latter is sometimes present in chronic inflammation of the stomach, and we have witnessed it in some complaints in which the stomach was apparently not much in fault. It is probable that this granulated appearance is occasioned by the injection and hypertrophy of the papillæ on the edges and apex, the place where they are most generally observed. That both these appearances point to similar conditions of the bowels is a position that is generally proved by autopsical examinations. The red smooth tongue with a persisting tendency to dryness is always of serious import, and often coincides with a fatal issue. In relation to the granulations, Andral in his Medical Clinic, remarks, "they do not always remain in the same state: at times they are very prominent, very red and very numerous; at other times they are less apparent, paler, and fewer in number. Their development is always in the direct ratio of the intensity of the gastric irritation. Among the persons who present this particular state of the tongue, some have a stomach habitually sick; others have what is called a delicate

or irritable stomach; they are forced to confine themselves to a certain regimen; they cannot without great inconvenience allow themselves the least excess in eating or drinking. This state of the tongue appeared to us more common in the gastric irritations of young persons than in those of persons more advanced in life. It is often observed in young females with a pale complexion and a weak constitution, whose stomach is habitually deranged; its existence may prevent one from considering and treating as nervous the symptoms they present on the part of the digestive organs. We have known several families, all the children of which presented this unusual development of the papillæ towards the apex of the tongue; in all there were at the same time other signs of gastric irritation. In one of these families the mother and her four daughters presented this particular appearance of the tongue, and all five had a very delicate stomach."

A blue or purplish state of the tongue is most likely caused by a feeble circulation. It is seldom, if ever, found in acute diseases where the circulation transcends the normal standard. In diseases of the heart with great lividity of the prolabium and countenance, the tongue and internal mouth partake of the general discoloration (Hall). The same is true of other complaints in which the nervous energy that keeps the heart performing its healthy function is interrupted or partially suspended, as for example in paralysis, several diseases of the nervous system, chlorosis, in purpura hemorrhagica, and in some forms of dyspepsia. This condition we have also witnessed in angina maligna, and in some cases of typhus. In the general, it should be regarded as indicating either primary disease of the heart, or an impaired state of the circulation from other causes. In angina maligna we have thought it due principally to defluxions in the vessels of the throat, which prevented the return of blood from the tongue to the heart.

Paleness of the tongue is usually, we believe, connected

with lesions of the function of nutrition. Like some other of the phenomena, it is associated with a similar appearance of the general complexion. The tubercular disease when uncomplicated with gastric irritation—scrofula, chlorosis, and dyspepsia, resulting from atony of the stomach, together with several forms of hysteria, are most generally attended with a pale tongue, at times translucent at its edges, and occasionally swollen. When excessive, hemorrhage also gives rise to the same appearance. Paleness therefore may be regarded as reflecting among other things primary trouble in the assimilative functions, disordered hæmatosis, or waste of blood.

What do the alterations in the form of the tongue indicate? The tongue may be increased much beyond its natural size, or it may be diminished, lobulated, fissured, chapped, or indented. An enlarged or hypertrophied state may be connected with an exalted condition of the principal functions of life, or it may be associated with a condition exactly the reverse. In glossitis the tongue is often very much enlarged. The same is perhaps true in cases of variola and scarlatina. Enlarged from causes of this character it is always very red; and there are febrile excitement of a high grade, and other urgent symptoms present. Cachexia, from deranged digestion, disordered liver, or a dropsical diathesis, gives rise to a swollen pale state of the the tongue. In chlorosis this state is characteristic, and the most frequently developed. Here, besides being pale, it is indented, sometimes sulcated, with an almost constant tendency to tumefaction. As a general rule, there is no fever associated with this condition. It is, no doubt, caused by the presence of morbid fluids in its substance, something similar to the tumefaction that takes place in the face and extremities in certain morbid conditions of the system, and may be looked upon as an evidence that the complaint has been of great duration, for it requires considerable time for its formation. Indeed, the physician, on inspecting a tongue of this description, is often able to surprise

his patient by the accuracy with which he can detail the history and symptoms pertaining to the case. A tongue less than the natural size we have so seldom witnessed that the class of diseases with which it is most constantly connected, as well as its indications, are, to us, matters more or less surrounded with doubt. About the same may be said of the lobulated modification of the form of the tongue; we have, however, never seen it except in persons advanced in life. It is caused perhaps partly by a shrinking of the substance of the muscles of the tongue, by which the surface is corrugated or formed into lobes resembling those of the cerebellum. An indented tongue always indicates great prostration and a want of cohesive force in the solids. It is found in the advanced stage of adynamic diseases, existing in conjunction with paleness and tumidity. What the import of a fissured tongue is, remains to be noticed. It is observed in sickness and in health, in the delicate and in the robust, in connexion with every variety of temperament, and in diseases entirely opposite in their nature. It is, however, like the lobulated appearance, peculiar to advanced life. The fissures may be few in number, and traversing the surface in a particular direction, or they may be very numerous, cutting it up into various forms. Existing in conjunction with an acute disease that produces a tendency to dryness, the fissured appearance would impart to the tongue a chapped appearance, that might be delusive, for it would import a high degree of gastric or intestinal irritation that perhaps would not be present.

Dryness of the tongue must always be regarded as a very grave phenomenon. Sometimes it is present at the commencement of a disease; oftener not until sometime afterwards. It is generally observed in connexion with a sthenic diathesis, inflammation, fever, local injuries, &c. It is liable to occur in inflammation of most of the organs and tissues, particularly in inflammation of the alimentary canal, whether primary or as the result of diseased action in other parts of the system. Usually the action of the heart and ar-

teries is above the healthy standard. Perhaps this is always the case except where the dryness supervenes upon a system worn down by disease or just before *articulo mortis.* A dry state of the tongue is always associated with redness; sometimes the surface is clean, at other times loaded and chapped, once in a while black. The degree of dryness varies according to the stage of excitement. In fever it is always greatest during the exacerbation; and indeed it frequently happens that this is the only period in the complaint in which the tendency to dryness is at all observable.—Again, dryness is apt to be present in the advanced stage of most diseases that terminate fatally. Evidently dryness originates from a suspended state of the secretions proper to the tongue and inside of the mouth. In the majority of cases it is a measure of the deranged condition of the secretions generally; and, although not always the case, it is pretty strong evidence of gastro-intestinal irritation. Very true it is that we may have a tendency to dryness of the tongue from some affection of the organ itself, or from disease of the mucous membrane lining the mouth, without much constitutional disturbance. And it is well known that we may have lesions of a very severe character in the stomach or intestines without giving rise to any abnormal appearance at all in the tongue, much less to dryness. Still we regard these as being exceptions to a general rule, and as a consequence look upon dryness as being among the most serious appearances with which the tongue can be affected.

It remains for us to make some suggestions on the import of several of the more prominent changes which take place in these morbid appearances, and also to say something concerning depraved taste, and the function of taste.

Pertaining to the color, there are certain changes which, by the intelligent practitioner, are well appreciated. In cases where the tongue has been very pale, as for example, in chlorosis, and commences returning to something like the natural color, amendment may be pretty safely predicted. Such a change would indicate that a salutary impression had

been made on the disease, and that the organism was returning to a physiological condition. Of the blue, exsanguineous, or limpid color common to some forms of heart disease, the same might be stated. The change would indicate a better state of the function of hematosis. A change from unnatural redness to the common appearance, is always regarded as ominous of favorable alterations in the character of the complaint, especially when seated in the stomach or bowels. Changes relating to the coat possess more or less interest. When this is noticed to be increasing in thickness and extent it may safely be affirmed, that the malady is in a state of progression. On the contrary, when it begins to peel off, leaving the surface beneath it of a normal appearance, the state of things, as a general rule, may be regarded as being favorable. To this, occasionally, we find some exceptions; sometimes, as in protracted fevers, it happens that a cleaning off takes place several times during the course without being attended with any visible improvement in the symptoms. In such, the surface beneath is found very red after the coat leaves it, and in many instances disposed to dryness and chaps. The color of the coat undergoes several changes which in this place might be noticed. It assumes in some complaints a dirty or brownish hue; in others it grows rather yellow. The former indicates tenacity and persistence in the course; the latter the approach or presence of biliary complication. A tongue that, during the whole course, continues to grow dry is, *cæteris paribus*, indicative of an unfavorable issue. On the contrary, where dryness has made its appearance early, and the organ afterwards exhibits a tendency to moisture the prospects of a recovery are very much increased. In many acute diseases we have the tendency to dryness for some considerable time existing in connexion with a similar state of the surface, palms of the hands, &c. While this continues the prognosis is equivocal. No sooner, however, does moisture make its appearance, than doubts are dissipated, and recovery may be predicted with some considerable degree of assurance.

The alterations which take place in the function of gustation afford in many instances evidence of a valuable character. Besides a perverted state of the function of the nerve of taste arising from the influence of the morbid cause, there are also other circumstances that exercise a prejudicial agency over the gustatory function. We allude to the coat on the tongue by which the sentient extremities of the nerve are so much covered up as either to prevent all contact with alimentary substances, or only such as gives rise to depraved taste. Subsidence, therefore, of depraved taste, and the return of the healthy action concerned in the function, may be regarded as ominous of amendment, and the return of the system to a healthy state. Some complaints we have witnessed in which the taste underwent but little if any change. But in such cases the coat has been either absent or very thin.

Related to the motions of the tongue there are some things that may at times be consulted with advantage. A tremulous state is frequently witnessed in typhus and its allies, and as a general rule, might be taken to import a debilitated condition of the system. Occurring in connexion with a nervous diathesis, or actual disease of the nervous system, its indications would be different. Partly it might then also be due to debility, but more likely to a lesion of innervation. As yet we have not witnessed a case of chorea or paralysis in which the tongue partook of the tremor incident to the part or parts affected. We can see, however, no good reason why this should not occasionally be the case. The want of power exhibited by some patients to protrude the organ over the teeth for inspection, no doubt, depends upon the same cause or causes giving rise to tremor, and should be regarded as being connected with about the same condition of the system.

June 25th, 1846.

ART. II.—*Remarks on Congestive Fever; with Cases.* By FRANCIS H. GORDON, M.D., of Clinton College, Tennessee.

The subject of Congestive Fever is one of so much interest to the profession in our country, that individual experience in the disease is not likely to be disregarded. In the hope that what I have observed in the cases which have fallen under my care may be useful to others, I have drawn up the following paper. I shall enter at once upon the history of the cases, following them by such remarks as have been suggested by my experience.

September 15th, 1845, I was called to T. Walker, æt. about 50 years. I found him in a "congestive chill," which had already persisted four hours. His extremities were cold; he complained of insatiable thirst, with an excruciating, burning pain in the stomach, attended with retchings; he had pain in the head also, and in his loins, and limbs, and a sense of weight along the sternum, with dyspnœa; his face was purplish, and in spots livid; his abdomen tender to the touch, and hard; his alvine dejections abundant, consisting of yellow water; urine scanty and red; tongue red, dry, and rough; pulse 100 in the minute, small and corded. As is usual in such chills, the patient expected hourly to die, and when the chill finally went off he expressed the fullest conviction that he could not survive a second one.

I gave the patient immediately 25 grains of carbonate of ammonia, and a grain of acetate of morphia, and applied a towel wet with cold water to the epigastrium. The ammonia was repeated every twenty minutes, and in about an hour after the exhibition of the first dose the circulation became general and the symptoms grew less threatening. I directed 18 grains of calomel, 15 grains of Dover's powder, and 6 grains of acetate of lead, each to be divided into three equal portions, one of which the patient was to take every six hours, and, if necessary, to promote their action by castor oil in six hours after taking the first powder. I also ordered

blood to be drawn to the extent of softening the pulse so soon as reaction should become complete. For the next day I gave the following prescription: Four hours before the chill is expected, give patient 20 grains carb. ammonia, and 2 grains of quinine; repeat the ammonia every half hour conjoined with spirits of nitre, ʒj., until within one hour of the chill, and then give him 2 grains of quinine and 1 grain of morphia, with ʒij. spts. nitre, and repeat the ammonia and spirits of nitre every half hour till the time for the chill has passed. About the hour of the expected access, apply sinapisms and hot irons to his feet, and keep him closely covered.

16th. At 4 o'clock, P. M., I found that the calomel had operated too freely, inducing green watery evacuations. The patient had escaped the chill, but his fever had been very high; his tongue was red and dry, and adhered to the finger; the epigastrium tender to the touch; sleep disturbed. Prescribed quinine, ammonia, and spirits of nitre as on the preceding day, to prevent the chill, adding morphia to the prescription; acetate of lead and Dover's powder, of each 2 grains, to be given often enough to reduce the alvine dejections to one aday, and if these are not sufficient to that end, use gruel enemata, containing 30 drops of laudanum, and 4 grains acetate of lead; pour a stream of warm water for four hours on the epigastrium, and follow this by hot bran poultices, to be renewed every twenty minutes.

17th. Patient a little better; had escaped his chill; with great difficulty the action of the bowels had been kept in bounds by means of the astringent and anodynes by mouth and rectum; less heat and tenderness of stomach; pulse still small, frequent and hard; abdomen swollen, hot externally, and tender to the touch; tongue as before. Directed acetate of lead, Dover's powder, and laudanum, as before; stream of warm water upon the abdomen for four hours and followed by bran poultices over the whole surface; half grain doses of morphia often enough to keep him quiet; ʒi. spts. nit. every hour till skin becomes moist.

18th. Slight general improvement. All the treatment of yesterday to be continued.

19th. Patient has had a slight chill, and symptoms are aggravated in consequence of his having had three alvine discharges in rapid succession before a speedy resort to the prescribed remedies had had time to control the bowels. Directed the stream of hot water and poultices as before; quinine, morphia and spts. nit. as in the onset to prevent the chill; 20 drops oil of turpentine thrice daily; 4 gr. ää calomel and Dover's powder to be taken instantly, and guarded, if required, by lead, laudanum, and Dover's powder, as before.

20th. Patient improved; has had but one consistent, dark green evacuation; had no chill; slept well three hours; tongue and skin not so dry; pulse less frequent and more soft. Directed 2 grs. quinine and 1 ℥ spts. nit. to be given when the fever abates, and repeat in two hours; lead, morphia, Dover's powder and poultices as before.

21st. Patient improving. Treatment continued. From this time till the 30th the treatment was but little varied, when sulph. and carb. magnesia were administered in small and repeated portions, guarded with lead and Dover's powder. Added to these I ordered as a tonic an infusion of quassia in doses of an ounce thrice daily. During the whole treatment the patient had been allowed only seven or eight teaspoonfuls of soup or panada a day; but his allowance was now gradually increased. Recovery was slow but progressive, and by the 25th October he was able with care to attend to business on the farm.

The foregoing is one case illustrative of many, which occurred to the writer during the prevalence of the disease in 1844 and '45. It is not reported with the view of presenting any unusual feature of disease, but from the impression that as much, or perhaps more good may be done by occasional reports of cases, with which the practitioner has usually to contend, than of such as are rare, and therefore less important.

I believe it is now common to attribute the phenomena of "congestive chill" or "stage of deprsssion" to two proximate causes, viz.: depression and irritation of the nerves of organic life. But along with this view, it is also common to condemn the administration of stimulants during the chill, on the alleged ground that these remedies are apt to do damage by "causing inflammation in the suffering organs," or by "producing an effect on the nervous system analogous to its then morbid state;" in other words, they will increase the morbid depression and irritation on which the chill depends. My observation is at variance with this inculcation. I could give many cases to prove, not only that stimulants do no injury in the stage of depression, but that they do considerable good, and are therefore indicated and demanded. Take one or two examples. Some time in the autumn of 1837, I went with Dr. B. W. Avent, of Rutherford county, to see some patients of his suffering with this form of fever. The object of my ride was to see his practice tested. Some of his patients had been treated on the popular plan, and others had been stimulated during the chill with large quantities of brandy, and bled to incipient syncope, as soon as there was partial reaction. Though I could hardly persuade myself to become a full convert to Dr. A.'s new practice, yet there was no question but that he had been more successful where the brandy had been used. I well recollect two patients in the same house, a brother and sister, who had been treated, the one on the popular plan, and the other with brandy; and the difference in favor of the stimulant could not be misunderstood. The Doctor had been induced to adopt the plan, because he had lost two or three patients for want of complete reaction; and he stated that a majority of those he cured narrowly escaped the grave, and then very slowly recovered. He had not yet seen any injury from the brandy.

I must be indulged in giving one case of my own. June 5th, 1844, I saw Mr. J. S., æt. about 40 years. His system had partially reacted from a chill, which much alarmed him and the family. I left him medicines to ward off two chills,

consisting of 25 to 30 grs. quinine, in solution of paregoric and spts. nitre, ää ℥iss. The next chill was expected at 8 o'clock, A. M., on the 7th. I directed him to begin at 2 o'clock and take ℥i. of the liquid every half hour till 9 o'clock, and as he was partial to pepper, allowed him to drink red pepper tea as he desired. On the 7th, about 11 o'clock, A. M., I was called in haste. The messenger reported Mr. S. as in a dying condition. I found him breathing with difficulty; pulse frequent, but full and not very hard; great internal heat and thirst; whole surface hot and very red. The great dread of another chill had caused the patient to commence taking the remedies at 10 o'clock the night of the 6th, and he had continued up to 9 o'clock that morning; in short, he had taken nearly all the quinine preparation, and besides had taken not less than a quart of red pepper tea. A weak solution of nit. potash as a common drink, and frequent sponging of the surface with cold water made the patient more comfortable, and recovery was rapid without another chill.

September 20, 1845. Saw Mr. E. Rollings in second chill. Symptoms could hardly paint a more severe chill, or more intense suffering. I immediately gave him a grain and a half of acetate of morphia, 25 grs. carb. ammonia and i℥. oil of turpentine. In about one hour the patient was easy, and I left him in a quiet sleep. It was the first case I had attended in the family, and the quaint remark of the patient the next day was, "that the Doctor had knocked the chill sky high."

Having combated many cases in the height of the chill, there is no question with the writer but that with morphia or opium, carb. ammonia and oil of turpentine, the worst chills may be moderated and shortened, and that a majority may be limited to one or two hours from the first administration of the medicines; and, instead of exciting inflammation, the tendency to it is certainly diminished by these remedies.

Having "crossed the Rubicon," in venturing to oppose the popular teaching in regard to this fever in one respect, the reader is no doubt prepared to see my presumption lead me

to speak in disparagement of quinine itself—the anchor of hope in all autumnal fevers. This remedy has been so highly and so universally extolled that its eulogy is common-place, and therefore no commendation. See how extravagant is the estimate of a good remedy. It is popularly said that "quinine is stimulant, tonic, diaphoretic, and, to some extent, narcotic and sedative—is capable of setting aside the febrile diathesis, and establishing in its stead a *specific* quinine diathesis, and is therefore an alterative." We are taught that quinine is the true and only specific in autumnal fevers. We are to bleed, vomit and purge to prepare for the quinine; give diaphoretics and diuretics to prepare for the quinine; cup, leech and blister, all to prepare for the specific, quinine. And some southern practitioners do not think it necessary "to prepare for the quinine" at all, but give it largely *ab ovo usque mala.* We are taught to give it in such quantities as will insure *tinnitus aurium.*

With all deference to high authority, let facts have a hearing. During the autumn of 1844, while the form of fever above described prevailed so generally as to keep every practitioner under a press, the writer ran out of quinine, and could get none at the drug stores in Nashville, nor could any be borrowed of neighboring practitioners. All efforts to procure the article having failed, I feared that some of my patients would die for the want of that valuable medicine. But to do the best I could in that state of things, I determined to rely on oil of turpentine, carb. ammonia and morphia; and the result of three weeks' day and night practice was, that all cases, from the mildest to the most violent, appeared to be as easily and as successfully managed, as they had been by the instrumentality of quinine. During the highest rage of this fever in 1845, which was truly alarming, I was out of quinine for more than two weeks, and succeeded just as well as when I had ounces of the article on hand. When a chill has commenced, my observation proves that quinine is of no avail in arresting it; nor do I believe that that article *alone will invariably prevent a chill*, however long it may be given

in anticipation. I consider opium or morphia more certain in arresting or preventing a chill than quinine; and when you prevent two chills in succession, the paroxysms are broken up, and the disease is easily managed. Any powerful stimulant, with a narcotic, given sufficiently in advance, and continued to the expected hour, will generally be effectual in warding off the chill. But the chief reliance should be upon a narcotic, of which opium is the best, to quiet or suspend the peculiar irritation on which the phenomena of the chill mainly depend. Allay the irritation, and there will be less manifestation of depression. When the regular paroxysms are broken up, I consider quinine more valuable as a tonic and permanent stimulant than in the onset of the disease. It equalizes the circulation and sustains the prostrate energies, until the system has time to recover from the shock it has sustained. But while quinine must be admitted to be a remedy of rare value, the above facts go to prove that its importance may be overrated, and that fever will still be cured after the present rage for that article shall have exterminated the whole genus Cinchona.

JUNE, 1846.

ART. III.—*Translation of a Chapter of the "Institutes of Medicine" of Heurnius*, from the Latin. By Dr. JOHN G. AFFLECK, of Somerset, Ohio.

Chance having, some years ago, thrown in my possession a very rare work, entitled the Institutes of Medicine, by J. Heurnius, printed at Leyden, in the year 1592, I have supposed that a translation of one of its chapters into English might be acceptable to the readers of the Western Journal, affording as it does a faint glimpse of the state of the medical art at the time it was written. I have been the more induced to lay this translation before those who peruse the Journal, from the circumstance, that as Dr. Coxe, of Philadelphia, proposes to translate the works of Hippocrates and Galen, and

as Heurnius seems to be only an echo of those celebrated men, an insight into the secrets of those masters, so far as this scrap goes, may induce some to further the investigation, and may stimulate the profession to give encouragement to the Doctor's enterprize. It may not excite our wonder that Hippocrates, and Galen, and Avicenna, should have held the doctrines advocated in the following chapter, but that Heurnius, who wrote only a little over two hundred years ago, should retail the same absurdities, may well cause a smile.

The Institutes of Medicine were, in their day and generation, good authority, for we find one contemporary calling Heurnius "*Grande decus columenque rerum;*" another, "the most illustrious and the most learned;" and another, "the New Hippocrates."

He was born in Utrecht in 1543; studied at Louvain and Paris, and at Pavia took the degree of M. D. in 1571. In 1581 he accepted the medical professorship in the University of Leyden, and continued to discharge the duties for twenty years, during which time he had an extensive private practice. He was often consulted by William the First, Prince of Orange. In 1592 his "*Institutiones Medicinæ*" were published.

The Institutes consist of twelve books, of which the first treats of First Principles—the 2d of Temperaments—the 3d of Faculties—the 4th of Humors—the 5th of the procreation of man—the 6th of the difference of diseases—the 7th of the cause of disease—the 8th of the symptoms of disease—the 9th of the urine—the 10th of the pulse and respiration—the 11th of prognosis, and the 12th of Therapeutics or the method of healing. To which is added an essay on the mode of studying medicine.

From the following chapter of Heurnius, on the "procreation of man," it will be seen that in the time of Hippocrates, Galen and Avicenna, the signs of pregnancy were nearly the same as in our own. It is true we have made an accession to our list of several new ones, although few of them are of much value, in a practical point of view. Of the signs lately

introduced, *ballottement* and *auscultation* have become fixed facts, and of immense value. *Jacquemin's test*, in this country, is of no practical worth, if true. *Gravidine* is yet sub judice, and *kiesteine*, although it has lately come into notice, under the auspices of Nauche, existed as a test of pregnancy, according to Heurnius, in the days of Avicenna. The original passage in Heurnius is, "Avicenna meminit urinæ ineunte pregnatione subalbidæ, tenuis, cui grana quædem innatare dicit." Would it not be worth the attention of some of our savans to examine the writings of Avicenna, and ascertain how much credit the late discoverer is entitled to? As a test, although creeping gradually into favor, it cannot be recognized as of primary importance.

The strange conceits about fruitfulness, twins, &c., will doubtless be estimated by the reader at their intrinsic value. In translating the chapter, I have followed the idiom of the author as nearly as possible, and have also added a few more extracts from different parts of the work.

Book v., Chapter v.—*Of the Signs of Conception—Of the Marks of Fecundity—Whether the Woman carries Male or Female, and whether Twins.*—About to treat of the signs of conception, let us first lay down the marks of fecundity—then the evidences of conception, and in the third place the signs which indicate whether a male or female fœtus is carried.

Hippocrates, pointing out the signs of fecundity, says, it is necessary to put a lotion upon the head, and dry it with lint free of all smell. In the evening, put galbanum upon the woman's bosom, and in the morning, while she is yet fasting, make warm the top of the head. If the galbanum sends up an odor, she will be fruitful, otherwise, not. So also in the aphorisms, he orders the woman to be perfumed with storax, frankincense and myrrh, and if the smell strikes against the nostrils and mouth, it argues fecundity. In addition to these signs, Avicenna says that barley should first be steeped in the urine of the man, then of the woman, and if it

germinates when committed to the earth, it denotes fruitfulness. He also recommends sulphur to be sprinkled upon the urine, and if in time it breeds worms, it is an argument for fecundity. Those of a warm temperament, and in whom the right testicle swells, mostly beget boys.

Whether a woman hath conceived you may determine by the semen not escaping, and from the mouth of the womb being shut. But obstetricians are admonished, that this shutting up of the uterus ought to be soft without hardness like an unnatural swelling. Besides, the menses stop, without fever and chills; but with nausea or pica, that is she will have a longing for strange things, occasioned by bad juices originating in the stomach. But you will say, Galen affirms in the 5th book, aphorism 60, that a woman sometimes is pregnant while the menses flow. Thus we say, and by this very flux the matter can be proved, for there are veins in the neck of the uterus which sometimes pour out abundantly the dregs which are in the veins of the womb, and which are collected between the second and third membranes; and thus in flowing it becomes of a pale color. But in what manner, therefore, if the blood thus flows, will we know if conception has taken place? We will know this from the copiousness and quality of the blood, which differs from that which is emitted from the unimpregnated uterus. From the impregnated woman it flows scant and corrupted—of an unsightly color, and useful neither for the fœtus nor mother. The blood in the impregnated woman goes out only through the veins, to the neck of the uterus, and not also through the veins of the body of the uterus. Besides, an evidence is given that the woman hath conceived, from the motion which is felt about the region of the uterus. But this happens also from flatus; true it is, but then the breast with the nipples will not be swollen; when the belly swells the breasts will also; this is almost in the last months. However, it may seem contrary to nature, that the breasts are sure to swell in the last months. Why not rather in the first months? for at this period a great deal of the excrementitious juices flows through the mammæ. We

reply: the excrement is sent into the veins of the uterus, and finally they being expanded and filled, the blood is forced in another direction. The swelling of the abdomen, which presses upon the veins already filled, also favors it. But one will say, in what manner in the first months will the uterus membranous and thin, receive so much excrement; for by tension the uterus is rendered very thin. Believe both Aurantius and myself, who have seen it in dissection, that the substance of the uterus in the impregnated woman does not become thin, as was formerly supposed, but grows thicker. The uterus eventually is changed from a membranous substance to one unlike any thing else in the whole body. It is a porous body like a sponge, and divisible into many layers and pervious like pumice, except the external tunic, which is connected with the peritoneum. When the fœtus has almost arrived at maturity the uterus nearly equals the thickness of two fingers, by which it becomes suitable for the excrement. At last the whole uterus is filled, and pressure in the last months being made upon the abdomen, by the swelling which compresses the full veins of the uterus, the blood takes another direction, and is carried rather to the spongy void of the glands, on account of the genuine sympathy which exists between the uterus and breasts, than to it; thither, therefore, the blood directs its course. Besides, in pregnancy the eyes become hollow and pale, for the reason that they are deprived of animal spirits, which, as they are made from vital spirits, are not carried equally to the brain, but rather to the uterus. Avicenna makes mention, in pregnancy, of the urine being pale and thin, upon which certain grains float. But this is a vain idea, for the urine passes neither through the uterus nor the veins of the uterus.

Now I will give a few signs how we may know whether the mother carries a male or female in the uterus. Hippocrates, in his book "De natura pueri et de formatione fœtus," says if a male fœtus be carried, the right breast will swell first, and the right eye will be more lively. The reason is that the male is for the most part conceived in the right part of the

uterus, and the woman will be of a more lively color; for when the male draws nourishment he infuses the masculine strength throughout the whole body, not otherwise than the testes do. But a woman ought not to be compared with others, but only with herself; that is, whether she is more sightly in the impregnated or unimpregnated state, and whether she enjoys herself the same as formerly, by reason of her way of living. For if she hath entered upon a better life after she hath conceived, although she may be pregnant with a female child, her color will be better than formerly. So if she carries a male and lives indifferently, her former color will be destroyed. But amongst all the signs, the motion of the infant is the most certain, for the male moves itself more vehemently. The female sometimes does the same, and on this account Avicenna prudently adds, that the male does it before the fourth month; for it begins to be moved in the third month. If it is a male, the woman will perceive the motion in the right side of the uterus, and the pulse of the right arm will beat more forcibly—the contrary, if a female. Avicenna adds that the right breast not only swells, but even pours out milk. He says you may pour the milk upon a glass, and expose it to the sun, and if it concretes like a spangle, she carries a male—if it is scattered, a female; for while a male is carried, heat increases; whence the milk becomes thicker. Hippocrates adds, if milk is spread upon lettuce, and it flows off, it denotes that the woman carries a female; and he says if the milk is mixed up with flour, and the mass put upon the fire, it indicates that it is a male if it can be toasted; but if dissolved, it is a presage that she carries a female.

But can it be known before, and in parturition, if the woman is big with twins. Before, if the tumor of the abdomen is large and she is of an unusual size. Avicenna asserts it is known in parturition, by the umbilical* cord of the first fœtus forcing its way out. If it has knot or wrinkle, the idea is that another fœtus remains in the uterus.

*I am not certain whether the umbilicus or umbilical cord is here meant.

Extract from the Essay on the Mode of Studying Medicine.—Hippocrates has always been esteemed the true exponent of the healing art. His writings are as oracles, and not the words of human speech. All antiquity cherishes him, as the author and director of all discipline. Celsus says he was a man renowned in science and richness of expression, and Macrobius says he neither knew how to deceive or to be deceived. In him there was a careful propriety of words—a concise accuracy of sentences—a venerated antiquity of speech—a commendable dignity of artifice. In his writings nothing is superfluous—nothing useless; but all expressed with beautiful brevity and significance; and the richness and amplitude of his facts far surpasses the number of words. These are natural and peculiar to Hippocrates. His benignity was so great that he knew nothing which he wished others not to know, and so great were his genius and wisdom that no one following him knew what he himself was ignorant of. In him you may find all the rudiments of medicine.

His most faithful commentator is Galen, who, as some say, lived one hundred and forty years. He, endowed with all philosophy and suitable philology, speaks every where in a pure, elegant, simple and never affected speech, not without a great store of words and sentences. He never offends the reader by satiety, but every where smooths the way of him desirous of progress, by rhetorical artifice. A man made for eloquence. In him you will find rare and select philosophical precepts, and more important than in any other writer. He obtrudes nothing upon the reader, which he does not demonstrate by strong reasons, and gives refutation to his opponent. He has very beautiful morals and subdued passions. He inveighs particularly against ambition and avarice, and treats learnedly and elegantly upon any subject. To no one, for the cultivation of his mind, are his words useless.

Extract from Book vii., on the Cause of Diseases.—According to Hippocrates, no cause predisposes more to disease, than the retention, or too great effusion of the secretions;

such as mucus, bile, excremens, urine, the menses and hæmorrhoids. Retained flatus is fruitful of disease, as you may understand by the edict of the emperor Claudian, who, as Suetonius tells, gave the privilege by a proclamation, of belching and breaking wind at entertainments, when it was ascertained that by retaining them through shame the health would be in jeopardy.

Venery also may be reckoned amongst the excretions. Galen, in his books upon the medical art, writes that Epicurus, the greatest philosopher, esteemed the use of venery to be unhealthy; but not without reason, for he held in contempt corporeal pleasures. For he was a temperate man, as Diogenes Laertius writes, and a good man—pious and a worshiper of God and friends. However, according to the opinion of Pythagoras, coition ought to be used by those who wish to become more reduced. Immoderate venery brings on infirmity of strength and decrepid youth, which, according to the opinion of Cato, as Pliny relates, indicates an early death; because by copulation the spirit is drawn from the brain, and as the benignant humor is suddenly poured out from the solid parts, they are defrauded of their peculiar properties, and native humidity. Truly nothing equally enfeebles the brain, says Cælius Aurelianus, makes weak the body, and disturbs the substance of the soul, like constant venery. Hence, as Pliny tells, Democritus condemned all coition. Venery is bad while the menses flow; and the conception is unhappy when the system is imbued with foul disease, as well as when it takes place with polluted blood; hence elephantiasis and lepra. Copulation becomes fruitful in those in whom the menses have just flowed, and to those who are, as if it were, hidden. Whence the ancients said that, under the moon, Venus, who dances before, leads the band. Venery is hurtful in tender age; whence Cæsar, in the sixth book of the Gallic war, writes, it is esteemed base to have connection with a woman before the twentieth year.

REVIEWS.

ART. V.—*Chemistry, as Exemplifying the Wisdom and Beneficence of God.* By GEORGE FOWNES, PH.D., Chemical Lecturer in the Middlesex-Hospital Medical School. New York: Wiley & Putnam. Philadelphia: J. W. Moore. 12 mo. pp. 158. 1844.

Of the many definitions which have been given of man, the most philosophical is, that he is a *religious animal.* While the races below him, so far as we can judge, are limited in their wishes to the "ignorant present time," happy if their physical wants are supplied, and without the sustaining influences of hope in times of distress, man in all circumstances looks to the future. How happy soever may be his lot at any given moment, if his future be darkened he is made miserable. This involves the necessity of a belief in a future state where the deficiencies of the present life will be supplied, and the evils incident thereto will no longer exist. Such a belief, we find, has obtained in all ages, and among all nations, and may therefore be termed instinctive. Far from having always been wisely directed, it has in a vast majority of instances degenerated into a dark and cruel superstition; but it is nevertheless the paramount belief of the human understanding. "The first and most indispensable condition of happiness to a reflecting, intelligent man," remarks the author of the admirable little work the title of which heads this article, "must be the acquisition of sound, consistent, and cheerful views of the relation in which he stands to his Creator; without these, all external appliances and means are worthless. Unless he be

deeply impressed, thoroughly imbued, with the conviction that he is, and shall be, every moment of his existence in the hands of a Being of unmixed and unbounded benevolence, exerted under the guidance of wisdom and knowledge, embracing all possible contingencies, and rendered effective by power extending to all things not involving contradiction, he cannot be permanently happy." Such a conviction the study of nature is calculated to impress upon the mind, and hence good men for centuries past have inculcated the study of the works of creation as affording the most convincing proof of the wisdom, power, and beneficence of the Creator. The writings of Boyle, who was equally conspicuous for his learning and piety, contain many arguments on this point. An admirable work has come down to us from the pen of John Ray, entitled the "*Wisdom of God manifested in the Works of the Creation;*" in which he considers the heavenly bodies, the elements, meteors, fossils, and vegetables, as well as the earth, its figure, motion and consistency, and especially the admirable structure of the bodies of man and other animals, in reference to that question. The same line of argument has been happily enforced by the pen of William Derham, a divine of a philosophical turn of mind, whose writings are still extant. The argument was taken up by the celebrated Dr. Paley, whose treatise on natural theology has acquired something of a professional character from the illustrations of Paxton, the anatomist. Since the appearance of that masterly work, the subject has received a flood of light from some of the first minds of the age. The hand has been exhibited by Sir Charles Bell as evincing design; Roget has treated of physiology; Kirby of the history, habits, and instincts of animals; Prout of chemistry, meteorology, and the function of digestion; Buckland of geology; and Whewell of astronomy and general physics, in the same relation; and Kidd and Chalmers have completed the argument by showing the adaptation of external nature to the physical, moral, and intellectual condition of man. The volume before us may be regarded in the light of a sequel to this series of works, known as the Bridgewater

treatises. Chemistry is a most progressive science, and the new revelations which it makes from year to year of contrivance and design, form an interesting accession to the immense pile of facts with which the argument has been fortified. We propose taking up the subject somewhat in detail, and, for the sake of variety, occupying a few pages of our Journal with other matter than that which is strictly medical; and in doing so we hope we shall have the indulgence of our readers, who will agree with us in applauding the sentiment of the Roman dramatist, that nothing is beneath our regard which relates to humanity.

One of the most abundant, as well as one of the most interesting substances of which chemistry treats, is atmospherical air, which is indispensable to the existence of all organized beings. The tree soon dies if its roots be surrounded by stagnant water and the oxygen of the air fail to mingle with its circulating fluids; and the zöophyte fastened to the rock is as dependent upon the vivifying principle of the atmosphere as the most perfect class of animals. The first act of the new-born babe is to inhale the air, and the last effort of the expiring man is to command its receding wave. This fluid surrounding the earth to the distance of about fifty miles, the home of everything that lives, the laboratory in which all the multiplied and curious processes of nature go on, has been studied by men in all ages, but until modern times studied to but little advantage. It was long regarded as an elementary body, which united with earth, fire and water, to compose the endless varieties of matter. Only a little more than half a century ago it was not known what the principle was to which it owed its life-sustaining qualities. Dr. Hooke, in the time of Sir Isaac Newton, conjectured that it must contain something analogous to the principle in saltpetre which rendered that substance so effective in supporting combustion; but oxygen, the common principle of the atmosphere and nitre, to which they owe the power of maintaining flame, was discovered by Priestley late in the eighteenth century. The other element, nitrogen, had been discovered by Rutherford

two years before Priestley separated oxygen, but he did not make the discovery that it was one of the constituents of the atmosphere. This was reserved for the great French chemist, Lavoisier, who, if his life had been prolonged, would probably have added to this other discoveries which would have left less for the genius of Sir Humphrey Davy to achieve. These more palpable truths connected with our atmosphere having been revealed at a period comparatively so recent—as compared with the age of physical science only but as yesterday—it is not surprising that there are still phenomena pertaining to the air which have eluded the scrutiny of the whole body of chemists, up to the present hour, and which fresh researches and more accurate analyses are necessary to unfold. The vapor so extensively felt, so much dreaded, under the influence of which so many thousands of our race are now racked with fevers or shaking with agues, how has it escaped the search of the philosopher! *Causa latet; vis est notissima.* The chemist has sought for it in vain in the most pestilential airs—over marshes and rice-fields, where to breathe the atmosphere for a single night is to contract a malignant fever. Art has not yet furnished us with the means of recognising any new gas even in places where the fever poison is so palpably present.

But enough is known of our atmosphere to prove that in its constitution and arrangement it is pefectly adapted to the wants of the beings that respire it, maintaining a comparative purity in the midst of circumstances which tend perpetually to render it impure; continually giving up one of its elements in large measure, and yet retaining each one in a state of perfect equilibrium. Not only is it indispensable to the beginning and perpetuation of life upon the earth, but it is the only fluid which could support the respiration of animals. No other combination of gases, though some of them would be innocuous, could replace the present elements which compose the atmosphere. The vitalizing constituent is its oxygen, to breathe which all animals are provided with lungs or gills, or some apparatus by which it may be made to touch

the blood. It gives vitality to the circulating fluid, suffuses the human cheek with the ruddy glow of health, and imparts elasticity and vigor to the muscular system. Nitrogen, the other constituent, is an inactive element, taking directly no part in the animal functions, entering into no combination with its fluids, and serving no other purpose that can be perceived but to dilute the oxygen, which would be too exciting to the system if uncombined. But, then, nitrogen is the only diluent, out of many gases, that could have been employed in an atmosphere designed for the living race. Hydrogen was substituted by Pilatre de Rozier for a little while, but his artificial atmosphere was combustible, and when he set fire to it an explosion resulted by which he thought, at first, that he had lost his teeth. In an atmosphere of hydrogen and oxygen, animals become drowsy as when exposed to the narcotic gases. In such an atmosphere, even if he did not perish speedily, man would lose his energy and grow listless and stupid, and a universal sleep would fall upon the animals that now sport around him so full of life and vigor. But not only so; as these gases form a fulminating compound they would take fire the moment that an ignited body was brought into contact with them, and explosions fatal to all animal existence would ensue. Fires would be out of the question in an atmosphere so constituted, and if a spark should chance to fall into it, or the clouds transmit their lightning through it, a conflagration would be kindled up which would shake the globe to its centre, and in an instant precipitate the air to the earth in the form of water. It is therefore clear that hydrogen could not take the place of the passive azote, the very passiveness of which seems indispensable to it as an element in our atmosphere. And it may be added, that of the many elementary bodies known in chemistry, all of which are capable of taking on for a time an aerial shape, no two but oxygen and azote would form a respirable fluid answering to all the exigencies of the living world. Most wisely, we conclude, then, has it been composed. Not the best materials merely, but the only

materials extant in our world that would answer, were employed in its fabrication.

Nor is this all. The proportions in which the elements have been combined are precisely the proportions requisite to the maintenance of life in full vigor and for its present term. If oxygen were more abundant in the air than it is, the systems of animals would be unduly excited; fever would ensue; and, as the flame burning with unwonted intensity sooner exhausts the matters it feeds on, the living body would perish of rapid inflammation. The life of man, limited now to a few score years, would be narrowed down to a few days of delirious existence. Even if he might be inured to so exciting an atmosphere, and escape the consequences of a combustion in his own frame, he would not be able to regulate his fires, or to employ many of the matters which are indispensable to his comfort. All his utensils of iron would take fire and become useless when he attempted to mould them by heat into the desired form. The various combustibles that now burn with a quiet and steady flame, diffusing light and cheerfulness through his dwellings, would pass rapidly away in an intense glare of heat and light unsuited to his purposes.

But this augmentation in the amount of oxygen is not the only disturbance that might be created. We may suppose the oxygen wasted and the nitrogen predominant, in which case we should have an air laden with a soporific influence—an air in which men might live, but their lives would be such as cold-blooded animals live. The system would languish under the want of its necessary stimulus; the blood, no longer crimsoned by its wonted contact with vital air, would creep in a purple current along lifeless tubes; the brain, robbed of its needed stimulus, oxygenated blood, would grow feeble and dull, and mind would no longer put forth its accustomed strength; the wings of the imagination would become powerless and tame, poetry would lose its inspiration, eloquence would cease, and even judgment, slow now in its operations, moving with a cautious and wary step, would lose all power of action. So that whether we should remove either of its

constituents, or simply vary their proportions, whether we should exalt or reduce its tone, disorder would be equally the result; and since this peculiar constitution is in perfect harmony with the sentient beings of this globe, the inference is natural that it came from the hand of a benificent Creator.

This evidence of wisdom and design becomes stronger when we look more closely at the arrangement by which the air is preserved against deterioration. The balance in its elements, so exquisite that the chemist has sought in vain for any variation, is opposed by multitudes of agencies which tend continually to disturb it. Every fire that burns, and every animal, during every moment of its existence, wastes one of the constituents of the air; and but for a provision counteracting this waste, the healthful atmosphere in which we now find ourselves invested would long ago have given place to an assemblage of vapors more pestilent than the air of an infected city. What is this provision? How, amid all the disturbing forces which ceaselessly assail this balance—the countless fires, and the myriads of animals that imbibe the oxygen, while they load the air with another gas hostile to life—is the primitive condition of this fluid maintained;—the oxygen kept from declining, and the carbonic acid, evolved without intermission over all inhabited lands, restrained within limits that render it harmless? By what magic influence is this beautiful adjustment preserved in the midst of this perpetual strife, so that after a contest of six thousand years neither force has gained any ascendancy?

At first the contest appears to be a perilous one, for as the carbonic acid is much heavier than atmospherical air it should tend continually to displace it, and by lifting it above the earth remove it from beyond the reach of men and animals. But what, looking at it *a priori*, would seem to be a dangerous tendency, is obviated by another law, which controls the law of gravitation. As late as the time of Lavoisier this law was not understood, and that acute philosopher believed that the light gases floated above the heavier, such as were combustible being kindled, now and then, in the upper regions of

the atmosphere, and giving rise to the coruscations of the aurora borealis. According to this law, the full development of which we owe to chemists of our own times, each gas is independent of every other, and expands and diffuses itself as freely as if it alone existed. The particles of carbonic acid rise through the oxygen and azote as freely as if it were rarer, instead of being, as it is, much more dense than those gases are. Each seeks an equable diffusion, and uniformity of constitution in the atmosphere is the result. No one constituent can ever accumulate at one point, or be permanently diminished at another. The particles of oxygen resting upon other particles of the same fluid are quickly sensible to the change, when its volume is affected by any of the disturbing causes to which we have alluded, and a motion takes place among them by which the vacuum is filled. In crowded cities, where numberless fires and lungs are rapidly abstracting oxygen, there is a tendency to a loss of the equilibrium—to a deficiency of the vital element and an excess of the azote, as well as of carbonic acid, which the lungs and fires evolve in copious measure. But the loss is never perceived; the noxious redundancy rarely occurs; it is only in peculiar situations that carbonic acid accumulates to a dangerous extent. Oxygen from other regions, from over the green fields of the country, and the distant mountains and seas, pours in perpetually to supply the waste; while the carbonic acid spreads abroad and attains a general diffusion. And thus it comes that the city has an atmosphere as free from these noxious gases as the air of the country, or only so slightly tainted by their presence that the chemist detects no increase in the proportion of its carbonic acid, over what is found in air taken from the summits of lofty mountains, or that which has been brought down by the aeronaut from its most elevated fields.

But there is still another provision for maintaining the equilibrium between the elements of the atmosphere and this intrusive gas; a provision as evincive as anything that could be conceived of beneficent design. This is the relation of the vegetable kingdom to carbonic acid, which is such as to form

a perfect balance between the two departments of organic nature. The functions of animals involve the production of this gas, and vegetables cannot grow without it. It is the appropriate and indispensable food of plants; they inhale it when in a growing state perpetually from the atmosphere, and, fixing the carbon in their tissues, set the oxygen free to minister again to the wants of animals. In this manner the atmosphere becomes the source whence vegetables derive their chief aliment, while these, by absorbing and decomposing the carbonic acid, contribute to the purity of the air, the forests and the fields returning to it its vitalizing element. By all these contrivances the balance is maintained with undeviating exactitude; nor, while these laws continue to be operative, can any derangement occur. No deleterious vapor can remain long stationary in any place owing to the law of diffusion, and so the poison of the pestilence becomes diluted and loses its power. It is impossible for the air ever to be stagnant. Its constituents, as we have seen, penetrate each other readily, and are continually changing place; its particles cohere by a trifling force, and hence currents are ceaselessly formed. That portion which grows heated is rarified, and rises, while the colder and heavier columns from above descend to take its place. The volume which rests at one moment near the earth, the next, expanded by the heat of the sun, may be ascending towards the region of frost, to return again to the earth after it has grown heavier by growing colder, and breathe among the flowers in the warm valleys below. The wave which floated yesterday over an iceberg at the poles, may be moving to-morrow over the sunny plains of the south; while the sultry air of the equator is passing in opposite and more elevated currents to temper the inclemency of northern skies. Thus the aerial ocean is never at rest. Currents are set up at every moment of time, and are a part of the machinery by which the air is preserved untainted.

Another quality in the gases composing the atmosphere displaying equal wisdom and design, is their low power of trans-

mitting caloric. Among the conductors of heat the gases are the worst; and it is even questionable whether they can be said in any true sense to conduct it at all. This negative property is essential to the air as the habitation of beings possessing a fixed temperature. Warm-blooded animals perish if the heat of their bodies be increased only a few degrees, and in a medium conducting heat rapidly such a result would be continually threatened. And in like manner the extinction of the living races would be endangered by the rapid abstraction of their vital heat in cold weather. Water heated above 120° of Fahrenheit's thermometer becomes painful to the hand; but men have exposed themselves to the air of rooms heated more than twice as high. Iced water would soon produce a fatal reduction of the temperature of animals; and yet men have gone abroad without injury when the air was a hundred degrees colder; and tribes of men subsist in climates where the winters are sufficiently intense to congeal mercury. If the atmosphere had been endowed with greater powers of imparting and abstracting heat than it possesses, it is manifest that it would not have been fitted to sustain the animal races, that now preserve their own unvarying temperature amid all the vicissitudes to which it is annually exposed. Just effective enough by the interchange of its particles in mitigating the heat of the tropics, it is so slow in robbing the body of its caloric that men find it practicable to live in the most rigorous climates.

Water is not less affluent than the atmosphere in facts evincive of beneficent design. Water, indeed, is most curiously made, and the more we look into its constitution the more we find in it to admire. It consists of bases which kindle the most intense flame at the moment of their union, and, the antagonist of fire, is formed whenever the fire burns. Its bases when they unite with other elements often give rise to compounds possessing acid properties, and no acid exists in which oxygen or hydrogen is not found to be a constituent. But when these elements unite with one another, instead of an acid, we have a bland fluid, destitute of taste and smell. The

air, we have been seeing, is in admirable harmony with the sentient beings that breathe it; but it would be a most unfit agent of respiration but for the presence of the water which infiltrates it like another atmosphere. Deprive the air of this aqueous vapor, and what is now the evening wind, or the refreshing sea-breeze, would become the blasting sirocco. But evaporation is so active that parched winds can traverse only narrow tracts of the globe. Wherever water exists evaporation goes on, and is not suspended even when the water becomes ice. In winter and in summer, in the burning and in the frigid zones, from the humid earth, and from expanded seas, the silent, invisible vapor is continually ascending. It is computed that the Mediterranean in this way gives up more water than it receives from all its great rivers. This water might have floated continually in the atmosphere as a cloud or fog, in which case, although it would have served as a medium of respiration, it would have drawn a perpetual veil across the heavens, shutting out from us the glorious light of the sun and stars. And so it has been kindly arranged that after the storm sunshine shall succeed. The vapor which rises spontaneously from water is not suddenly condensed like that which is raised by artificial heat, but in ascending combines with electricity, whereby its particles are rendered self-repellent, and assume the form of minute vesicles. These little hollow spheres constitute clouds, which are buoyant by virtue of the electricity with which they are charged. So long as the vesicles preserve their form the water of the clouds is kept suspended, but the moment they collapse the rains begin; and this takes place when the charge of electricity is lost. The earth being in an electrical state opposite to that of the clouds, will attract them; their electrical fires will pass to the earth; and thus the storm begins. The showers always descend most copiously just after a flash of lightning, the cloud-bubbles collapsing in consequence of the escape of the electrical fluid. But the balance is restored after a time; the lightning is no longer in motion; spots of azure break out in the troubled sky, and the "bow of hope

and promise" starts up upon the bosom of the retiring cloud. Mountains favor this process, and in view of their beneficent agency might be reckoned to be so many guardian giants, which have been stationed through the earth to collect the showers and disperse them over the valleys and plains consigned to their care. As more rain falls in mountainous districts than in champain countries, they give origin to numberless rivulets, which gradually swell into broad rivers that bear upon their bosoms the commerce of the country, and carry fruitfulness to the lands below.

But the whole beauty of this machinery has not yet been unfolded. Water, it is well known, comprises much the larger portion of the surface of our globe, and these vast oceans are sources of perpetual exhalation. What would be the result, if the water thus exhaled into the air constituting the material of clouds were to return directly to the bosom of the deep? It is quite palpable that barrenness would spread over the earth, and all organized beings perish from the face of it; and the arrangement by which this is prevented must be held to evince benevolent design. The clouds of the ocean, probably because charged with the same kind of electricity as the ocean itself, are repelled from it; the vesicular form of the vapor is preserved, and the buoyant clouds float over the sea to the distant shores; there to be drawn down by the hills and mountains, watering the earth that it may give bread to its inhabitants; again to be borne by the universal slope to the parent ocean; and so continue to run through this magnificent circle of changes so long as the existing condition of the world endures.

Let us consider for a moment some other interesting phenomena connected with the precipitation of atmospherical moisture. All are familiar with the fact that bodies, suddenly cooled, condense the aqueous vapor in the surrounding atmosphere, and most persons have been struck with the connexion between the ready condensation of this moisture on the tumbler of cold water, and that state of the weather in which rain is likely to fall. The earth being a better radiator of caloric

than the air, is found soon after sunset to be colder than the air just above it; and thus it becomes a condensing body. The vapor in the air surrounding it is precipitated in the form of dew. But who has not been struck with that beautiful provision made for the living world, as he has walked abroad in the morning and beheld each spire of grass, and every green leaf pendant and dripping with the dews of the night, while the dry inorganic bodies around had received only a small share of the moisture. The plants, owing to their rough surfaces, give up their caloric more rapidly than the dry, hard earth, and for that reason the dew is distilled more richly upon them.

Although water evaporates at a very low temperature, the evaporation is in a direct ratio to the heat; and hence it follows that in hot climates it is much more rapid than in cold. It is most abundant in tropical countries, where it answers the beautiful end of mitigating the intense fervor of the sun; and is but trifling in amount in polar latitudes which have no heat to spare. And the mode in which it descends differs equally in the two regions. In northern climates it comes down in a gentle, almost perpetual mist, and warms the air by the transition from a vaporous to a liquid state. If it fell thus in hot climates, the clouds continually hovering over the earth would check evaporation, and render the air intolerably sultry; the rains falling so slowly would sink deep into the ground, and vegetables bathed in this perpetual moisture would rot before they ripened; and the face of the country would become an extended marsh, exhaling every fetid and poisonous effluvium; a fit residence only for lizards, bitterns, and other unsightly aquatic animals. But in such latitudes it descends in sudden, drenching rains which flow rapidly into the streams; the clouds quickly disburdened of their showers are soon dispersed, and the vertical sun beaming upon the earth renews the process of evaporation, dissipates the excessive moisture, and enlivens the inhabitants with an elastic atmosphere.

The specific gravity of water is precisely that which fits it

for the various offices it must perform in the present constitution of our universe. By virtue of its density it floats the seeds of vegetables to plant new colonies upon distant continents and islands, extending thus the dominions of the living world. The ocean, too, is whitened with the sails of commerce; the light of science, and the arts that soften and refine, are borne to every quarter of the globe; and civilization, and the hopes of the gospel are spread as far as there are winds to waft or seas to roll them. A fruitful soil is brought down from the disintegrating rocks of the mountains, and spread out into vallies and plains for the use of the husbandman. A home, adapted to their forms, answering to all their wants, is furnished for the myriads of aquatic animals which swim upon its surface or glide swiftly through its waves. Increase its density, as to that of quicksilver, for example, and ships of iron with platinum for ballast alone could navigate it in safety. Or make it lighter, and the light canoe would not float upon it, and the splendid barque that now "walks the water like a thing of life," would be engulphed and lost beneath its waves.

One of the most admirable laws of water is, that it freezes. This subserves a hundred most important purposes. Water gives out heat in freezing, and thus in the coldest quarters of the globe, as it is congealed by frost, it is liberating vast volumes of caloric, and the process of congelation is in this way counteracted, and at last arrested, by the heat which itself sets free. Freezing is a warming process. Every fall of snow, it has been computed, imparts more heat to the atmosphere than would be afforded by the same quantity of pulverized red hot glass. But evaporation is a cooling process. Extended oceans spread their bosoms to the sun, in equatorial regions, and the vapor which they send up tempers the fervor of his vertical rays. It is borne along to the north by the upper currents in the air, and descending in the form of sleet or snow, sets at liberty the heat which it absorbed in the south. Thus by the same splendid operations which cool the temples of the children of the sun, are the horrors of the po-

lar winter softened and made supportable. The aurora borealis, the glory of northern climates, is also an effect of the same arrangement. The electricity which is transferred thither in combination with the vapor, descending with the caloric and accumulating upon the ice at the poles, at last breaks through the atmosphere into the vacuum above, and in hastening back towards the tropics gives out light to cheer the long winter nights of those regions.

Other advantages grow out of the congelation of water, and the circumstances which attend this process. Most bodies grow smaller as long as they continue to grow colder, contracting when they freeze. Water is of a smaller class which obey another law; a law fruitful in most beneficent consequences. It expands in freezing; by which we see bottles holding it broken; strong tubes conducting it burst; and the strongest metals confining it riven asunder. Mark, then, the operation of this law. The earth, after receiving the rains of autumn, is congealed by the winter's frost. The water in it being expanded, the soil is pulverized and made light, and prepared for the roots of the tender, growing vegetables in spring. But more. Ice, as a consequence of it, forms first on the surface of our rivers and streams. The intestine motion which goes on in water when subjected to a change of temperature ceases at a particular point. Cooled down to 40° of Fah., it attains its maximum density; and as the cooling proceeds, those particles which are reduced below this point float upon the surface, being lighter, and finally arriving at 32° are frozen. In the mean time the warmer water below being heavier, remains at rest; its heat being in some degree kept in by the covering of ice above. Did water continue to grow heavier, as it became colder, until it arrived at the freezing point, a cake of ice would form first at the bottoms of our rivers; the whole of their waters would be reduced to the point of freezing before congelation began; and their fish by affording a nucleus would be among the first objects to be incarcerated by the hardening ice. The cold of a few nights would congeal deep rivers, and the ice lying far

below, would not be softened by the returning suns of summer. The inhabitants of water would perish. Coasts would cease to afford, as now, the most genial climates and luxurious homes.

So much turns upon the simple law, that water grows lighter before attaining the point of congelation, and expands in freezing.

Water freezes at the right temperature. Alcohol has never been frozen by the cold of the polar winter, or by the most intense freezing mixture. Suppose such were the law of water. We should indeed have frozen oceans no longer, and the explorer of northern seas would find a liquid surface as far as there were gales to propel his ships. But we should have rains much colder than ice or snow,—rains that would sink the thermometer to zero—that falling upon the earth and penetrating the soil, would chill it beyond what the heat of the returning summer could restore, and blight and destroy the seeds and roots of all vegetation.

But now, reduced to the temperature of 32°, it loses its liquid form, gives its latent heat to the ambient atmosphere, and descending as fleecy snow, throws around the earth a mantle which shields it from the more intense degrees of cold. For snow is a very imperfect conductor of caloric. The earth is often little lower than 32°,—of the temperature merely of ice—while the air is 50° below zero.

But inconceivable disasters would flow from its easier congelation. The cold of a night might arrest commerce—the wide ocean would be covered with ice, our springs cease to run in winter, and a solid crust bind up the earth where now the plough of the husbandman finds a pulverized and genial soil ready to receive the seeds of the future harvest.

No common liquid undergoes ebullition at the same temperature with water. Ether boils at 98°, alcohol at 175°, mercury at 650°, water at 212°. If it boiled at 98° with ether, we should be frozen in mid-summer, as we freeze water by the evaporation, in other words, by the boiling, of ether

under the exhausted receiver of the air pump. If it boiled, with alcohol, at 175°, still the earth and our bodies would be too much cooled by the rapid evaporation; while we should be forced every day to complain, with the Augustine Monks on the great St. Bernard, that the water could not be made hot enough to prepare our soup. But if, instead of boiling at these reduced temperatures, it reached the point at which mercury boils, before ebullition commenced, it would disorganize and destroy all materials of aliment, and become useless as a culinary agent.

But, although the boiling point of water is so much below that of mercury, its capacity for heat is about thirty times as great. Thirty times as much heat is necessary to raise water to 212° as to bring mercury up to that point, and consequently water is heated thirty times more slowly than that liquid. In boiling, water combines with much heat which becomes latent, and is not appreciated by the thermometer. The same is true of ice in melting. Hence the boiling of water, and the melting of ice, are processes which go on slowly. Were the law otherwise, and did not the great capacity of water for caloric exist, when it became heated up to 212°, it would instantly flash into steam, and no boiler, however powerful, would be able to resist an explosion. And in like manner ice would instantly liquify, when it was raised to the temperature of 32°. Instead, as now, of softening gradually under the increasing heat of spring, the accumulated snows of winter would be melted by the heat of a single day, and pour down from hills and mountains in wide-wasting inundations.

Water is the natural beverage of man and other animals, and as a diluent for their food it is necessary that it should be comparatively free from saline substances; and yet the sea is charged with salts. The chloride of sodium in which it abounds, like water, is a necessary of life; as a condiment it is essential to the tone of the alimentary canal, the privation of which induces disease. Besides, it is an antiseptic upon which we depend mainly for the preservation of much of our most valuable food. The ingenious author of the work referred

to at the head of this article conjectures, that the water of the ocean was not originally brackish, but has acquired that quality from the washing of the land by the rivers which flow into it. However this may be, we find the condition of the sea, at present, precisely such as favors the wants and business of human society. The salt in its waters tends to preserve them pure, while it is an abundant store-house from which men may draw forever; it renders the water heavier, thus adapting it more fully to the purposes of commerce; it also makes the water much more slow in congealing. This ingredient, so important where it is, is left in its ocean-bed while the water is exhaled. Fixed in its character, heat never evaporates it, and the vapors which rise from the sea are without any saline admixture.

The earth is equally full of these proofs of design. We speak not of its position in reference to the sun, nor of its mountains, and slopes, and valleys, which give us the variety of seasons and climates, and our oceans, and running streams; but of its chemical constitution. Entering into its countless forms of matter, there are recognized nearly sixty elementary substances; some of which, in their action upon organised beings, may be said to be neutral; some are capable of assuming shapes which minister to their nourishment and growth; some exist in quantities so small that they are rarely detected; many can be isolated only by delicate and tedious processes; and many, in respect to animals and vegetables, are highly noxious. Silica is the most abundant, after oxygen; and, to say nothing of the necessity of this substance in the composition of the cerealia and many other species of plants, whereby their stems are rendered hard and capable of supporting their ripening fruits, or of its importance in many of the most useful of the arts, such as glass making, porcelain, bricks, &c., it is the only material known in chemistry out of which the soil could have been formed. It renders the soil porous and penetrable by the rootlets of plants. It allows the rains to descend into the earth to water the growing tribes of vegetables. The matter associated with it in largest mea-

sure is alumina,—familiarly known as clay; and these two constitute a bed in which the water holding the food of plants is detained sufficiently long without being kept about their roots permanently, as it would be in a bed of pure alumina. They form a perfect soil, so far as relates to the retention of moisture; but the clay and sand are but little concerned in the development of plants, and although essential ingredients in the soil, and forming much the larger part of it, if other elements had not been associated with them the earth would have remained a barren waste. Lime, in the form of a phosphate and a carbonate, enters into the composition of vegetables and animals, and to the latter is an indispensable article, since of it is chiefly composed their bony frame-work. Without phosphoric acid and lime, we are safe in saying there could not be any vegetable or animal life, and accordingly we find that these substances make a part, though often only a very inappreciable part, of every rocky bed. Potassa is equally indispensable to the maintenance and development of organized beings. Every part of plants contains it, and it is also a constituent of many animal secretions. So obscure was the origin of potassa and phosphoric acid, that for a long time physiologists were inclined to maintain that they might be created in the living organism by the powers of life; but at the present day this notion is entirely discarded, and no one now doubts that they are derived by plants from the soil. The crust of our globe, after we descend below the sedimentary deposits of limestone, shale, marble, &c., is formed of granite, a large proportion of which consists of felspar, and of this 14 or 15 per cent. is potassa. The source of this alkali is therefore perfectly evident. Chemists had more difficulty in detecting phosphoric acid, but Fownes has at length succeeded in showing that it exists in clays, and is a constituent of granite. Felspar, though an exceedingly compact and resisting rock, gradually crumbles down under the influence of the weather, by which the contained alkali is rendered soluble. The disintegration goes on so slowly that no more potassa is set free, from year to year, than is needful for the

support of the annual growth of vegetables; the wisdom of which provision will be seen when it is considered, that the alkali is easily soluble and would be wasted by the rains if disengaged more rapidly than plants were able to take it up; in consequence of which the land would become barren. The potassa thus imbibed with their water by vegetables is easily extracted from their ashes, and forms an article of the highest economical value. The price of soap and of glass, not to specify other products of human industry, would be enhanced many fold if the supply of potassa were cut off, as virtually it would be were we compelled to extract it from clays, instead of deriving it from the ashes of vegetables. It is the presence of this alkali in milk that keeps it fluid; when neutralized by an acid the milk coagulates; and since fluidity is a necessary condition of the food of young animals, it is clear that but for the existence of potassa in the earth, from which plants extract it, the preservation of the animal species upon the earth would be impossible.

Of the fifty-five or fifty-six elements known to the chemist, more than forty are metals, and while many are objects of great interest and value, not a few are possessed of such qualities that their wide diffusion through the earth would be a dire calamity. Carbonate of lime is met with as forming a portion of the rocky strata of most countries; the water used by the inhabitants of such countries running over these strata is highly impregnated with this inactive salt. Now suppose, in place of these limestone beds which cover millions of miles of our earth's surface, the external crust consisted of carbonate of baryta? Manifestly, the "pure antediluvian beverage" would have been rendered unwholesome by the presence of this compound, and the race of animals would probably, long since, have perished from the earth. In like manner, if arsenic had been extensively mingled with our soils or blended with the superficial strata of our globe, the result to animals would have been disastrous. But there is one metal so inoffensive in its character that it might safely enter into every soil. Belonging to this beautiful class of bodies is one without

which human society could never have become refined or powerful; without which art could not have attained its efficiency, nor science its marvelous elevation; without which fields must have been unskilfully tilled, and navigation limited to the humblest coasting excursions. It need hardly be said that we refer to iron, for our description is applicable to no metal but that:—a metal, which is not only the most valuable of the class, and incomparably so, but is at the same time much the cheapest—diffused more widely than our own restless race—piled up in mountain masses in many countries;—a metal which takes precedence of all others in many mechanical processes, because it is the hardest, the toughest, the most enduring. Iron is, indeed, a wonderful metal; naturally the plainest and the least showy, but susceptible of a lustre outshining all its kindred; the only metal which, by collision with the flint, emits fire; almost the only one which bears welding; the only native magnet, and nearly the only one in which magnetism permanently abides—forming the needle by which the mariner, in the darkness of the night and amid the fury of the storm, guides his barque in triumph to the distant haven; the only individual of this extended class which, in all its forms and combinations, is friendly as well as safe to the economy of animals, making one of the essential constituents of their blood, and for their health gushing in a thousand springs. It is curious that iron, which has been applied to so many purposes of usefulness and luxury, should have been found to be an efficacious antidote, and, in the present state of our knowledge, the only antidote, to arsenic; and still more curious, that it should turn out to possess the power of disarming even a more speedy poison of its virulence. As if not enough that iron should be "king of the prow, the ploughshare, and the sword," and the antidote to arsenic, it is endowed with the ability to divest prussic acid of its noxious qualities.

The human race was slow to discover the virtues of iron, and ages passed away before it was generally applied to the wants and purposes of civilization; but when it came to be searched for and extensively used men were surprised to find

how their convenience had been consulted in its distribution. Deposited in inexhaustible beds in the sides of mountains hard by the iron, are almost always found extensive coal fields; the metallic ore and the fuel being placed in alternate or contiguous strata. And often in the same neighborhood the limestone rock is found which is necessary in the extraction of the metal. This arrangement is so convenient, so wise, that it cannot be regarded as accidental; but we must conclude, that the hand which deposited the iron ore in the hills, laid down there also the strata of stone coal and of carbonate of lime, to be used by man, in remote ages, for separating the valuable metal from its dross.

The origin of these beds of coal is a problem which has greatly perplexed geologists; but whether we suppose with Adolphe Brongniart that they are the remains of plants which were necessary in the early stages of our globe to extract from the atmosphere the excess of carbonic acid, thus fitting it to become the theatre of the higher races of animals; or conclude that they consist of the combustible parts of plants which grew and flourished in an atmosphere having the constitution of the present one, no one can doubt that they are of vegetable origin; and as little can any one fail to see in these extended deposits of fuel a regard to the comfort of those who were to become the rational inheritors and lords of the earth. We say, no one can question that the coal fields, immense as they are in superficial extent, and rising thousands of feet in height, are the residuum of what were once living vegetables. Whether or not we shall ever be able to make out a satisfactory solution of the manner in which they grew, and perished, and were submerged, one layer after another, until the mass became mountainous, we are forced to adopt the belief that what is now the amorphous stone coal had once the delicate organization of plants. These perished in their season, and their parts, protected against the oxygen of the atmosphere, have taken on this shape. There they have reposed for untold centuries, a mine of energy and wealth for the human race; and when they are extracted by the miner

and submitted to the transforming force of fire, their elements are sent abroad once more to take a part in the business of life. Their carbon, uniting with the oxygen of the atmosphere, assumes an aerial form, and their hydrogen, combining with the same principle, ascends in the shape of invisible exhalation. This column of vapor rising from every fire is gradually condensed into clouds, and falls to the earth in fructifying showers; and the carbonic acid is also brought down again to hasten the growth of vegetables, to enter into their structures, expand in their green leaves, develope their fruits, and go abroad in the aroma of their flowers. The plants which adorned the earth when as yet there were probably no human eyes to enjoy their beauty, having slumbered for ages unknown, by this beautiful provision become once more active; and after warming us in the fire, and cheering our habitations by the light of their combustion, go back to the sisterhood of plants, there to pursue the round of growth, decay, and reproduction until it shall please Him who organized them in the beginning to summon them to their last repose.

It would not be easy to imagine any more conclusive evidence of design than is afforded by the perfect adaptation of the two organic races to each other, of which the arrangement just described is a beautiful example. By the law of diffusion the carbonic acid generated in the lungs, and which would remain in the cells there but for this law, presses out and mingles with the atmosphere. Its retention in the lungs would very soon become destructive of life; but its presence in the air is indispensable to the sustenance of vegetables. It forms not more than one part in every two thousand parts of the atmosphere, and yet the carbon in this, insignificant as it seems, amounts to more than that contained in all the existing forests, and all the beds of mineral coal in the earth united. In this gas is an inexhaustible store-house of aliment, from which vegetables may draw from age to age. During the winter season, when the forests are bare, and the fields no longer clothed in verdure, the carbonic acid, which is largely evolved by the respiration of animals, and the num-

berless forms of combustion in cold climates, is borne away towards the south by the prevailing winds, where a perennial vegetation stands ready to take up the excess. And, in this way, animals may be said to furnish a portion of the food to the plants by which, directly or indirectly, all they themselves are nourished. Nor is carbonic acid the only element of food which vegetables owe to the animal kingdom.

Among the products of vegetable life we find a class of bodies of exceeding interest to us, on account of their relation to animal nutrition. These are albumen, fibrin, and a third compound termed casein, which agree in containing azote. They are essential to animals, as composing the materials out of which blood is formed, and are justly styled the "elements of nutrition." Now, it is almost certain that plants do not derive this azote directly from the atmosphere, and the question arises, from what source then do they obtain it? Like the carbonic acid, the azote is supplied to them by animals. Animal substances in undergoing decomposition are remarkable for the generation of ammonia, a gas containing nitrogen as one of its constituents. We have only to conceive of the countless forms in which animal matter is perpetually exposed to this process over the wide earth, to have some idea of the extent of this supply. The ammonia thus exhaled without intermission into the atmosphere is dissolved by its hygrometric constituent, and brought down to the earth along with the rains. It percolates the soil, and is aspired by the plants, which decompose it and fix its nitrogen in their nutritious compounds. The contrast between the two living races is here most remarkable. The chemistry of one consists in building up organized compounds; that of the other in breaking these down. Vegetables imbibe ammonia and carbonic acid, and out of them fabricate the organic matter that animals must receive in order to subsist; animals appropriate these organic bodies to their uses, convert them "by a descending scale into compounds less and less complex, until at length they reach the inorganic condition, and once more become capable of assimilation by plants." And thus "a perpetual and unbroken

chain of vital phenomena is established, the products of one order of beings becoming the sustenance of the other." Dumas has very happily contrasted these opposite functions of plants and animals in his "Balance of Organic Nature," thus:

The Vegetable	The Animal
Produces the neutral azotized substances,	Consumes the neutral azotized substances,
———fatty substances,	———fatty substances,
———sugar, starch, and gum,	———sugar, starch, and gum,
Decomposes carbonic acid,	Produces carbonic acid,
———water,	———water,
———ammoniacal salts,	———ammoniacal salts,
Disengages oxygen,	Absorbs oxygen,
Absorbs heat and electricity,	Produces heat and electricity,
Is an apparatus of reduction,	Is an apparatus of oxidation,
Is stationary.	Is locomotive.

The exercise of the animal functions implies a waste of the materials of the body, and demands a perpetual supply of aliment. From the moment that the young animal begins to breathe to the close of its life, the parts of its body are in a state of incessant change. The secretions remove what has become useless; oxygen is absorbed into the system at each inspiration and converts a portion of it into water and carbonic acid, which escape every time the lungs collapse; muscular exertion and the very exercise of the brain itself in thought, are attended by changes in matter, as necessarily as the evolution of electricity in the galvanic battery is accompanied by solution of the metal. The supply of this never-ceasing wear of the animal body is derived from the vegetable kingdom; but until the subject was taken up by Liebig, chemists and physiologists entertained vague notions as to what were strictly the nutritious principles in plants. We have already mentioned that these are now conceded to be albumen, fibrin, and casein; and these remarkable products of vegetable life are identical in composition. It is upon these that animals subsist, whether derived from animal or vegeta-

ble food. Nutrition is the same in the carnivorous and the herbivorous tribes. All alike are nourished by these azotized bodies. The herbivora must consume more food to find the requisite supply of these principles than the carnivora are obliged to do, because the nutritious principles are concentrated in the food of the latter; but the elements out of which the blood and all the organized parts of the body are formed are the same in both.

But when we come to analyze the food of herbivorous animals more minutely we find that fibrin, albumen, and casein are associated with other matters essentially necessary to their comfort and their very existence. We find that along with these are sugar, mucilage, starch and oil, some of which their economy imperatively demands. In the grains so much relished by animals, starch is a much more abundant principle than albumen; in the grasses, sugar is the most important element. The young of the mammalia depend in the first periods of their existence upon the milk of the mother; and besides casein, the blood-making principle, we find in this fluid sugar or oil, and, in the milk of the herbivora, both. These take no part in nutrition, but they have another office to perform as important as that of developing the frame of the young animal. This is the maintenance of animal heat.

The food of animals, therefore, is not all nutritious, nor is the only object of eating the supply of the wasting tissues. A certain temperature is essential to the perpetuation of animal life, and this is preserved by a combustion within the body of a portion of what is taken into it as food. Alimentary substances are hence divisible into two classes;—*the plastic elements of nutrition*, or the azotized principles; and *the elements of respiration*, embracing sugar, starch, gum, the oils, and some others. The first, as already mentioned, have the same composition, and no difference can be detected between the fibrin, albumen and casein of vegetables, and the same elements as extracted from the animal solids and fluids. Taken into the stomach, and absorbed by the lacteals, these principles are assimilated to the animal economy without any

change in their chemical constitution. The fibrin and albumen of vegetables become the fibrin and albumen of the blood, and of the muscular tissue, and the brain of animals. The elements of respiration enter the system without taking part in its nourishment; they are followed by oxygen which passes through the lungs and combining with them converts their hydrogen and carbon into water and carbonic acid, animal heat being the result. If there be an excess of these they assume the form of fat, under the influence of a refined chemistry, and are deposited in the body as a store of fuel to be taken up and oxidized in seasons of scarcity, or when the increasing cold makes larger demands upon the calorific function. The nutritious elements also undergo this process of combustion, after they have served their end in the animal economy. The parts which have lost their vitality in the incessant round of changes are seized by the oxygen, resolved into carbonic acid, and in this way removed from the system where their presence would be injurious. And the effete tissues, which thus pass away to minister to the growth of vegetables, do not leave the animal system without further contributing to its comfort by liberating heat. As in our seas and rivers, oxygen is evermore engaged in removing impurities by a slow combustion; so in the animal economy it maintains this process without intermission, from the moment of birth to the end of our da .

But these organized elements of food are not the only materials, necessary to the development of animals, which we draw from the earth. Nobody now imagines that the female bird *creates* the phosphate and carbonate of lime, which compose the shells of her eggs. They are supplied by her food, and if this be wanting in them, the shells are soft. We have already adverted to the dependence of animals upon these salts of lime for the efficiency of their bony frame-work; and also to the importance of potassa to milk. Soda is found always combined with albumen, and is necessary to keep it in a fluid state. Iron is one of the constituents of the blood, and sustains such a relation to its health that we are safe in con-

cluding that the tone of the system could not be maintained in the absence of this metal. Sulphur and phosphorus are met with in the protein compounds, and take part in the animal organism. All these are drawn by plants from the soil. Potassa is extracted from the granite rocks, and soda from common salt, which is diffused everywhere; iron is separated from its ores, and sulphur from its salts. The vegetable, by a process of vital chemistry which we cannot imitate, combines them with its albumen and starch, its casein and sugar, and moulds them into the form most pleasing to the animal appetite, most conducive to animal health and vigor. And then a Providence, evidently considering the welfare of the human race, has kindly placed between man and the vegetable kingdom his domestic animals who live to collect for him the materials of his food. The grass which nourishes his sheep and oxen contains all that is requisite for his nourishment; but he would die of starvation if driven to subsist upon grass. His cattle go abroad over his fields, gleaning from all wholesome herbs the principles which make his blood, and invigorate his frame. He thus has leisure for study and the cultivation of his nobler faculties.

It would be a waste of time to insist that in all these relations of the living races to the earth and to one another, there are indisputable evidences of a beneficent controlling Mind.

These evidences are everywhere to be seen, but, to adopt the closing thought of this admirable essay, nowhere throughout the whole creation is the goodness of the Almighty more conspicuous than in the means he has provided for revealing himself to his intelligent creatures, by conferring upon them these powers of discovering truth, and of appreciating its beauty and loveliness.

The "*Actonian Prize Essay*" is worthy of a place beside the very best of the Bridgwater Treatises. Its scientific details will interest every reader, and its noble moral reflections elevate and warm his heart.

SELECTIONS

FROM

AMERICAN AND FOREIGN JOURNALS.

Characters of Broussais and Baron Larrey. By Reveillé-Parise. *Broussais.*—Entering life amidst the turbulence of the French Revolution, the early part of the career of Broussais was stormy and uncertain. Soldier, corsair, hospital-clerk, navy-surgeon, student, civil practitioner, and lastly, military surgeon in the Napoleon campaigns, his existence was destitute of repose. Nevertheless, robust in body, firm in determination, and gifted with great aptitude for work, he pursued his studies in spite of every fatigue and difficulty. He eventually came to Paris and became a pupil and an intimate of Bichat, and an ardent admirer of the opinions of Pinel. His treatise *Des Phlegmasies Chroniques*, which had cost him immense labor, fell almost still-born from the press; but, although he felt the disappointment in the keenest manner, he concealed it, and pursued his indefatigable researches in Spain and Italy, examining thousands of bodies, accumulating a vast mass of facts, and meditating over them for years.

It was in 1815 that he commenced his private course. It was only two paces from the Faculty that he cast forth his haughty defiance and raised altar against altar, doctrine against doctrine. From the first he announced himself as a reformer of science, proceeding by physiological demonstration to a complete rebuilding up of the structure of medicine. And let it not be supposed his course resembled any other of this kind, that is a simple and calm exposition, methodically elaborated, of the principles of the art. No, it was literally a true arena where the professor fought alone and to the death. It was on his part an exhibition of harshness and frankness, an aggressive and ill-boding discussion of received theories, a continual explosion of recrimination against the science of

formerly and its constructors, a constant affirmation of his own doctrines, a haughty and disdainful treatment of those of others—the like of which had never yet been seen. Then, the choleric argument, the passionate tone, abrupt gestures, the thundering voice of the professor, and his animated countenance, for he always seemed as if illumined with inspiration, added much to the effect of his addresses. The numerous and crowded auditory kept the deepest silence, the more as their attention was always, so as to say, enslaved, because it was continually excited. * * * * Broussais joined to a great penetration a very cultivated mind; and thus we may remark in his lectures, in his reiterated appeals to the progress of science, a skilful mixture of truth and error, a certain art of presenting the latter with the probabilities of reality. Although exclusive in his ideas he announced solid principles. Not content with observing and collecting many facts, he knew how to compare them, and deduce from them consequences often strained, but at other times undoubtedly just. To consider science under aspects until then unknown; to open a new horizon to ulterior researches in the study of diseased organs; to state his principles in an exact and precise manner; to reduce them to the rigor of a theorem; such was the end he proclaimed, and which he flattered himself he attained. So much knowledge and application, such high pretensions, united to the fire of conviction which seemed to animate him, to that ardor of proselytism, to that perseverance in self-glorification, to that fanatical esteem of his system, perpetually announced as the complete *resumê* of the entire range of medical truths, gave to the lectures of Broussais an astonishing popularity. Auditors crowded and pushed their way to them as to a theatrical amusement, and, more than once, pupils, who were unable to gain admission, might be seen taking their notes in the sun or rain when the loud tones of the professor allowed them to seize the purport of some of his observations.

In 1815 his *Examen* appeared. In this, the opinions of his adversaries were handled with the bitterest sarcasm and irony, and his own doctrine developed with surpassing skill. His success was prodigious. Not only were his dogmas received with enthusiasm by the schools, but even the convictions of elder practitioners were much shaken; so that the advent of a new era of medicine was proclaimed on every side. The deceptive simplicity of the system, and the magical words "progress," "advancement of science," "new doctrine," contributed immensely to its popularity; and those

who dared to attempt to oppose its reception were covered with terms of reproach and contempt. It is not surprising that Broussais became intoxicated with the incense constantly poured out before him, and imagined himself exalted into supreme judge of what should or not be received as sound doctrine. Yet, at the end of a few years, it was discovered that he, like many other reformers, was more potent in criticizing and destroying present structures than in raising new ones; and that the system of the man who had been so ready of visiting those of others with sarcasm and contempt, was not itself proof against the shafts of the critic. Remarks, criticisms, exceptions, and objections now multiplied on every side; but we need not follow the exposure of the errors of a system which never obtained much currency here, notwithstanding the Gallomania which some of our Journals endeavored to foster. M. Parise exhibits concisely not only the unscientific character of the principles laid down, but the bad effects which too frequently flowed from their practical adoption; for a practice which had been borne by the robust young soldiers coming within the sphere of Broussais' observation, was ill-suited to the feebler constitutions so often met with in civil practice. Once submitted to a rational examination, the system rapidly declined in estimation; and even when in the possession of an official professorship its constructor could not raise it from the neglect and disfavor into which it had fallen. His vehement denunciations against the older systems no longer drew the crowded auditories of heretofore, and the few pupils who attended his lectures seemed to do so more as a curiosity of by-gone days than as a reality of the present. Whether from faith in its truth, or from the desire of drawing upon himself the attention which had so notoriously flagged, Broussais next became a propagator of phrenology. Again he had a large and applauding, if not a judicious auditory: "but the concessions he made to his adversaries were so numerous, that Gall would hardly have recognized his own doctrines in his discourses." He adopted for the defence of this the same paradoxical arguments, the mixture of error and truth by which he had sought to defend the doctrine of irritation. It will not seem surprising that Broussais only attained a rank in the practice of the profession very disproportionate to his merits and reputation. His exclusive mode of viewing cases so limited his range of therapeutical indications, although the force of circumstances sometimes obliged him to make concessions. One of those related of him is amusing enough. A patient having declared to him that he could sup-

port his regimen no longer, and that he was literally dying of hunger, Broussais reflected for a moment and replied, "Very well, you carnivorous animal, I will satisfy you," and ordered him a spoonful of broth in a glass of water. However, concessions of any kind were wrung from him with difficulty, for he prided himself upon his inflexibility to objections or adversaries. Nevertheless, after venting the most bitter sarcasms on places and riches, he allowed himself to accept some of these, and the great agitator was found lecturing in the professor's gown, and placing six lines of honourable titles after his name in one of his works!

Regarding Broussais with impartiality, uninfluenced by the excessive praise of his admirers or the bitterness of his detractors. we shall find he was a man of rare capacity and incontestible merit. It will be allowed that he has rendered services to science and has proclaimed truths which will endure. Nevertheless, if he appears great, the narrowness of his views is striking when compared with those of Bichat. This is because he was too exclusive, too absolute, in his ideas, because he has forcibly referred facts to two or three principles only, that is to eitner too few or too many, and because he has, with a view to his system, proclaimed the true and the false with an equal ardor. In the place of pruning, adding, and extending, he was desirous of radically destroying and re-constructing; and, at a period when doubts were raised, he struggled for the most formal materialism. Thus, although he has shed a luminous ray on science, although he proclaimed himself its master, his opinions have been attacked, his pedestal shaken; and his titles to true glory strongly contested. What remains of him now? Has Broussais done what he ought and could? Has he fulfilled his mission worthily and completely? Posterity, that high court of appeal for reputations, will decide in time to come. She will be just, yet severe; for, according to Scripture, 'much is required of him to whom much is given.'

Larrey.—The character and services of Larrey are so well known and appreciated in this country, that we need borrow little from the sketch here drawn by his friend and colleague. It is always, however, pleasing to accumulate instances of the excellent conduct of the members of our profession; and we question if the *beau-ideal* of a military surgeon was ever more realized than in the character of this celebrated man.

At the battle of Eylau he remained 30 hours without eating; and so hurried and ardent was he in dressing wounds

and giving orders, that paralysis of the bladder was nearly induced. Friends, enemies, every one, might claim his services. He saw only suffering creatures imploring the succor of art. Degree of rank in nowise decided his preferences. No matter what the epaulette, he only saw the wounded man, whose blood, poured out for his country, was equally noble and precious. After having operated on Marshal Lannes, and visited Duroc, the intimate friend of Napoleon, he would dress with equal eagerness the wounds of the lowest soldier or the conscript of yesterday. His colleagues even, always his dearest friends, never met with preference. Our hononable *confrêre*, M. Tanchou, tells us that, when wounded in the battle of Montmirail, he was taken to Larrey's *ambulance:* 'Your wound is a slight one,' he said, 'we have only room and straw here for bad accidents. However, they may put you in yonder stable.' The gravity of a wound was in fact the only ground of preference in his eyes. * * * * * * * * The more severe and doubtful an action became, the more the activity and resources of this great surgeon multiplied—his first and only thought being the succor of the wounded. During the highest raging of the battle of Waterloo, when the fire was continuous and murderous, the author of this sketch and Larrey met, when he exclaimed, 'My dear colleague, look to your wounded soldiers. Pay attention only to them.' He added, 'the firing is hot indeed, but let every one do his duty and all will go on well. * * * * * Larrey had so little dissimulation, that one of his defects, perhaps the only one, was the high opinion he entertained of his own talent and works. He praised himself with such a good faith and confidence, but his weakness was the more excusable, as it was not without foundation, facts answering to words. Frequently a deep colossal pride, peculiar to celebrated men, is disguised without, and hidden with care; but Larrey concealed nothing. All his thoughts and words were without disguise, for he knew not how to conceal his pride at the bottom of his heart, like some who are termed modest. Oftentimes he raised a pedestal to himself with the same simplicity, the same confidence, as if he had performed the most virtuous action or the greatest sacrifice. We may sometimes smile at his simple and frank want of modesty, and at the same time admire his noble heart full of rectitude, honor, probity, and courage, a stranger to the manœuvres of personal interest, concealed under the veils of philanthropy and love of science. What he delighted in, above all things, was to protect and assist others by his coun-

sels and his credit; so that he always regarded surgeons whom he had known, and who were a little younger than himself, as his pupils. In writing to the late M. Coutanceau, then professor at *Val-de-Grâce*, Member of the Academy, and author of different works, he never omitted concluding with 'your affectionate brother-in-law and former professor.' This was not pride or the desire of superiority, but a bond of patronage, good-will, and reciprocal attachment, which he delighted in tightening and continuing.'

In perusing the accounts of the lives of late and present members of our profession in France and in our own country, we have often been struck with the far larger proportion in the former nation who have raised themselves from indigence and comparatively low conditions to the highest position of professional eminence. And in the facilities which that country affords to her industrious and enterprising youth, destitute of family connections, pecuniary resources, or hospital influences, for attaining the highest offices in her power to bestow, we see an example well worthy of imitation in our own country, where a very different system of selection, or rather of succession, prevails.—*Med. Chir. Rev.*

Flogging in the British Army. From Marshall's Military Miscellany.—Our author has fully described the manner in which the various military punishments, including flogging, are carried into effect in our army. As a matter of course, we must refer the curious reader for details to the original. All that we shall do is to pick out a few passages, that may be supposed to have some interest in a medical point of view. When a man is to be flogged, he is, after stripping himself to the waist, tied to a machine termed a triangle, his hands being pulled up to the top of it and there secured; cords are passed round the upper part of the thighs, and the ankles. At other times, the delinquent is lashed to a gun-wheel or a tree. The amount of suffering from the punishment then inflicted may depend a good deal upon the manner in which the prisoner is secured. If the ligatures are too tight, the hands may become quite black and benumbed—the numbness continuing for several days—from the stoppage of the circulation; this arises partly from the man's hanging on, as it were, by the hands. If, again, they be too loose, he is liable to move and wriggle about from side to side, by which means the *cat* falls on unsuitable parts, as the ribs, the neck, or even the face and eyes.

During the last war it was very common to flog upon the breech, and sometimes on the calves of the legs, when the back and breech were unsound from former inflictions. Flogging on the breech is said to be more painful than on the back, probably in consequence of the greater sensibility of the extreme parts of the body.

The first stroke of the cat, says Dr. Marshall, occasions an instantaneous discoloration of the skin from effused blood, the back appearing as if it was thickly sprinkled with strong coffee, even before the second stroke. Sometimes the blood flows copiously by the time the first fifty or one hundred lashes are inflicted; at other times, little or no blood appears when two hundred lashes have been inflicted. During the first one hundred and fifty or two hundred lashes, a man commonly appears to suffer much, considerably more, indeed, than during the subsequent part of a punishment, however large it may be. The effused blood in the skin, or, perhaps, some disorganization of the nerves of sensation, seem to occasion a blunting of its sensibility, and thereby lessen the acuteness of the pain arising from the application of the cat. Left-handed drummers, whose cats are applied to a portion of sound skin, and drummers who have not been sufficiently drilled to flogging, spread the lashes unnecessarily, and excite an unusual degree of pain. Delinquents frequently call out to the drummer to strike higher, then lower, and sometimes alternately.—*Med. Chir. Rev.*

The Medical Profession—Quackery.—The monster evil, of a social kind, which affects the medical profession, is the general poverty of its members; no further proof of this need be adduced than the immense number of qualified assistants, who are everywhere ready to take service at less salary than that obtained by ordinary clerks, or even the superior classes of servants. The numbers of the profession, relative to the general population, is frequently complained of, and none can deny that the legally constituted bodies have most reprehensively suffered pretenders to medical knowledge to spring up on all sides of the regularly educated practitioners of every grade, many of them armed with degrees which may be had for mere purchase, and which are in no wise a test of medical proficiency. But setting aside, in a great measure, this source of mischief, we believe that the legitimate funds which should of right be contributed by the nation to the medical faculty

would be amply sufficient to provide for every respectable individual in this country, having any title, legal or otherwise, to call himself physician, surgeon, or apothecary.

The profession is robbed, not by thousands, or by tens of thousands, but by hundreds of thousands sterling, annually. This may seem startling at the first blush, but let us consider the modes in which the funds, which should enrich the profession, flow into illegitimate channels; consider how the public, the other professions, and the government, trench upon its rights, and it will no longer be matter of doubt. Take the sums paid annually to knavish pretenders, who are impudently engaged in practice without the slightest show of right; add to this the sums taken by prescribing druggists; add again the yearly sums paid by the public for patent medicines; to these add the immense sums by which the profession is underpaid by the government for services rendered to the state, or by public bodies, as in the case of the New Poor-Law Commission;—take these, and numerous other items, into consideration, and it will be seen that we have not dealt in figures of speech, but in plain figures of arithmetic.

The obvious mode of relieving the profession of that poverty which these and other causes have rendered so prevalent, is to raise the qualification for practice by raising the standard of medical education, and rendering it penal for unqualified persons to engage in practice. Then, this good effected, the boundaries of the profession must be enlarged, by a close examination of all those points in which the evident functions of the medical faculty are performed by other persons; and this scrutiny must be followed by a determination to assert the rights of the profession. To show our meaning, we need only refer to a few points which, together with others, we shall have hereafter to consider seriatim. There is the quarantine system; the office of coroner; and the entire range of medical statistics: the regulation of lunatics and lunatic asylums; sanatary commissions of various kinds:—all these departments of the public service ought, if the public welfare were alone considered, to belong to the domain of the medical faculty. These things belong to us of right and justice, and can and may be had for the asking. The profession is like a big boy at school who has been set upon by his fellows, but who has only to put out his strength to take at once his proper position.

The monster cause of poverty and degredation is quackery; and this we confidently believe could not exist in its present rampant state but for the countenance afforded to it by members

of the profession. Often, indeed, this is done, without improper motive,—unsuspectingly, in fact, though the bane is not the less. Low views have crept in, and the very highest members of the profession often give direct and indirect aid to empiricism, without dreaming what they do. They will recoil from the consequences of their own act when placed nakedly before them. It will be a grand object to separate legitimate medicine from quackery. When this can be done, quackery by itself is such a monstrous bubble that it must shrivel of itself to nothing. But until this is accomplished, legislation will be in vain, and quackery will continue respectable. We shall begin the task by putting our finger upon every glaring or covert professional of empiricism open to observation, not, meanwhile, sparing the unprincipled public quacks themselves. If this separation were effected, and quackery stood bare to public scorn, the profession might then ask for the abolition of patent medicines; till this is the case, the proposal will only be met by ridicule.

Time will show whether the great objects we have proposed are attainable in the present day; whether the professional boundary may be so enlarged as to include a vast amount of emolument and honor now absorbed by extra-professional persons, and whether the immense funds which are at present diverted into improper channels may not be regained for the profession.

Professional opinion, and the action born of strong opinion, are the powerful levers which must be moved to effect these things. It may be a difficult task, but in our labors we shall be animated with a bold hope for the issue.—*Lancet.—Med. News.*

New Method of Preserving Organic Matters.—At a late soirèe, held by the Marquis of Northampton, Dr. Silvestri, physician to the Royal Hospital at Naples, and chief physician of his majesty's guard of honor, exhibited several preparations made according to a method discovered by him. By this process organic matters are perfectly preserved, being converted into a substance possessing the hardness of stone, and admitting of being polished. Among the preparations shown, were a portion of human liver, a section of a kidney, a section of a testis, and some hands and heads. In these specimens the texture was perfectly apparent when examined with a magnifying-glass, but the substances themselves had

acquired the hardness and resonance of stone. The head of a ram possessed the stony hardness peculiar to these preparations, while the ears and hairs retained their natural softness and pliability. Birds, submitted to this process, retain their feathers uninjured either in color or pliancy; fishes are coated by a kind of transparent varnish; and the cornea retains the transparency of life. Dr. Silvestri has also succeeded in preserving flowers in the same manner, the petals retaining their natural hues, and the stem and leaves their pliancy and verdure. He gives the following statement of the applications of his discovery:

An entire corpse, without being injured in the slightest degree, can be brought to a consistency appreoaching to petrifaction, and preserved for an infinite period in full perfection of form, with the hair, nails, &c. Like a statute, it can also be placed in any given position, as illustrative of individual character or station.

Animals of every species, from the elephant to the insect, are susceptible of being reduced to the same state of consistency and preservation. The plumage, fur, wool, and all other adjuncts of nature, remain entire, retaining the same color, firmness, and flexibility that they had at the moment of death.

The same result can be produced in the single parts, organs, &c., of any organic animal body, without undergoing any alteration whatever, even though injected previously to the operation.

All the objects in question may be petrified in such various degrees of intensity as may be judged necessary for the purposes of dissection, observation, examination, &c., with perfect freedom from stench, and all else of an objectionable nature, either when handled, or preserved as objects of curiosity.

Flowers and plants can be preserved unchangeable, with their colors, form, leaves, and stems, as if just gathered.—*Lancet.—Medical News.*

Poisoning with Arsenic.—MM. Marsh and Lados have ascertained that when a pregnant woman is poisoned with arsenic, the arsenic may be transmitted to the fœtus. In an official investigation of a case of this kind, they discovered traces of the poison in a fœtus at the fourth month. The uterus and the placenta also contained arsenic, but the pla-

centa contained a proportionally larger quantity than the fœtus. The liquor amnii contained no arsenic, at least the quantity, if any, was inappreciable.—*Bull de la Soc. Med. de Grand.—Med. News.*

Treatment of Diabetes Mellitus by Balsam of Peru.—Dr. VAUHES reports in the *Journ. des Connaiss. Med. Chirurg.*, a case of diabetes mellitus cured in five weeks by balsam of Peru. The medicine was given in the dose fifty drops four times a day, and increased to five drachms daily.—*Medical News.*

Death from the Effects of Cold Water Treatment.—The London Lancet, for August, 1846, contains an account of a patient who was killed by the improper use of cold water, also the trial and conviction of the doctor for man-slaughter. It seems that the patient had congestion of the lungs, and applied to the Hydropathic Institution kept by one Dr. Ellis, who pronounced it a case of hepatitis of the sub-acute character, and put him in the sheets wet in cold water, which caused his death in a short time.

Upon making a post-mortem examination the lungs were found to be in a highly congested state, which was no doubt much increased by the application of the cold water treatment, causing the death of the patient; but the liver was not diseased, as the hydropathic man had said.

It is a great pity that some of the evils of this catch-penny system in this country, could not be brought to light. They tell of all their successful cases, but we never hear of their bad cases, by them. The idea of taking a delicate female with disease of the heart, or any other disease, it makes no difference with them, and placing her in cold wet sheets, and obliging her to drink four or five tumblers of cold water three times a day, is too absurd for sane people to believe to be the best mode of treatment; yet we find many following the plan, whom we believe to be sane on all other subjects. Cold bathing is an excellent thing for those in health, and should be used daily, but not in the manner that it is by the hydropaths. But as to drinking cold water, we should be very careful, for all kinds of drinks taken in excess are injurious to the system.—*New York Med. and Surg. Rep.*

Hooping Cough.—At a meeting of the Medical Society of London, held January, 1845, Dr. Waller stated that he had recently employed the extract of belladonna, in two cases of hooping cough with the best results. He gave it, in the dose of one-twelfth of a grain, three times a day to a child four years of age. In these cases there was simply the spasmodic cough, without any indication whatever of the existence of inflammation. Mr. Crisp remarked, that in the majority of cases, he had found the antiphlogistic plan of treatment to be the one best adapted to the early stages of hooping cough. He viewed the disease generally as inflammatory, or at all events congestive. Contrasting the antiphlogistic treatment (leeches followed by blister and the use of tartar emetic) with that which he had formerly pursued, he had every reason to be satisfied with the change he had made. The prussic acid he had usually found to be of service only for a day or two.

Dr. Wiltshire had treated, at the Infirmary for Children, simple uncomplicated hooping cough with two or three emetics of ipecacuanha—one every morning or second morning—followed, for two or three days, with nauseating doses of antimony, and had found this plan of great service in the early stages of the disease. Hemlock and ipecacuanha were of benefit afterwards in relieving the cough. With respect to belladonna, he was fearful of its employment, for notwithstanding the evidence in its favor, adduced by some of the German physicians, others had found that this medicine had a tendency to increase vascular action in the brain, and to produce hydrocephalus.

Dr. Chowne laid particular stress, in the treatment of hooping cough, on the necessity of keeping the patient in a warm temperature, and using every means to prevent his taking cold—nauseating doses of ipecacuanha, he considered to be frequently of benefit. With reference to the production of emphysema by hooping cough, he did not believe it possible.

Dr. Clutterbuck viewed the disease as one of a specific character, resulting from a specific cause—it was a specific inflammation of the bronchial membrane, but apt to induce inflammation of other organs, as the lungs or head, and it was these complications that constituted the dangerous character of hooping cough. He had little confidence in any remedy for this affection. The disease should be narrowly watched, with the view of prevention, rather than of active treatment—if mild, nothing was necessary to be done, it would terminate

spontaneously—if inflammation of the brain, lungs, or other organs was threatened, antiphlogistic measures were demanded.

Dr. Golding Bird regarded hooping cough, in its first stage, as invariably an inflammation of the bronchial tubes, larynx and trachea, of a specific character, and implicating, in some peculiar manner, the par vagum. This inflammation lasted for a definite period, which is influenced by constitution and other causes. In its second stage, the disease is *nervous*—the specific irritation of the *par vagum* being kept up, altogether independent of inflammation; or when this is present it is merely accidental: the disease is afterwards kept up by the influence of habit. In the first stage the remedies for bronchitis (emetics, diaphoretics, the warm bath, and a warm temperature) are advisable. When the inflammatory stage is passed, attention should be directed to subdue irritation in the par vagum by narcotics—such as conium, in conjunction with carbonate of potash, hemlock, and hydrocyanic acid. Embrocations to the spine and chest are also useful. When bronchorrhœa becomes troublesome, small doses of alum, with sedatives, are of advantage. When the bronchorrhœa has ceased, tonics are indicated—the kind of tonic to be determined by the constitution of the patient. Emphysema does not occur as the consequence of hooping cough.

The president of the society had found in some cases where belladonna was given, that the poisonous, rather than the curative effects of that remedy developed themselves, even though the doses administered were remarkably small. With reference to the irritation of the par vagum in hooping cough, he related a case in which this nerve had become exposed, from the formation of an abscess, or other cause; and it was remarkable, that when the nerve was in contact with the air, a spasmodic cough resembling that of pertussis was produced: when the nerve was covered over by a cicatrix, the spasmodic cough ceased.

Dr. Golding Bird remarks (Guy's Hospital Reports, April, 1845,) that, in the second or nervous state of pertussis—after all inflammatory symptoms have subsided; and when, with a tolerably cool skin and clean tongue, the patient is still distressed by the more or less copious secretion of viscid mucus from the bronchi; each attempt to get rid of which, produces the exhausting and characteristic cough; no remedy will be found to act so satisfactorily, or to give such marked and often rapid relief to the child as alum. He has not yet met with any other remedy which is equally efficacious. Dr. Bird

generally gives the alum in doses of from two to six grains in children of from one to ten years of age, repeated every four or six hours. For a child of two or three hours, he employs generally the following formula:

℞ Aluminis gr. xxv; extr. conii gr. xij; syrup. rhædos. ℥ij; aq. anethi ℥iij. m. Dose a medium sized spoonful, every sixth hour. Dr. B. has never met with any inconvenient stringent effects on the bowels during its exhibition; on the contrary, in more than one instance it produced, he says, diarrhœa. The only obvious effects resulting from its use were, diminished secretion, and of a less viscid mucus, with a marked diminution in the frequency and severity of the spasmodic paroxysms.—*Trans. Phila. Col. Phys.*

Aconitum Napellus in Neuralgia. By Alexander Fleming, of Edinburgh.—I have met with several cases of neuralgia, in which the individual had, for weeks or months, been in the habit of procuring sleep, and a temporary cessation of pain, by opiate draughts, and who, on using the Aconite, obtained permanent relief for the disease.

Exhaustion by alcohol is the best mode of obtaining an active preparation of the plant. Cold water takes up but little of its virtues; and the expressed juice contains only a portion of its active properties; while the latter are entirely destroyed by exposure of the drug, in any of its forms, to a high temperature. These circumstances are explained by the fact, that Aconitina, the active principle of the plant, is soluble in alcohol, but not in water, and is decomposed by much heat. *Boiling in water, if long continued*, is sufficient to deprive the plant of the power of producing numbness and tingling (Geiger); but Dr. Christison has ascertained that this property is not diminished by a heat of 212°, in drying the plant, or in preparing an extract from it.

These facts account for the variable strength and frequent inertness of many of the preparations formerly in use, such as watery extracts, expressed and inspissated juices, &c.

Tinctura Aconiti.—Take of root of A. Napellus, carefully dried and finely powdered, sixteen ounces Troy; rectified spirit, sixteen fluid ounces; macerate for four days; then pack into percolator; add rectified spirit until twenty-four ounces of tincture are obtained.

It is beautifully transparent, of the color of sherry wine, and the taste is slightly bitter.

Extractum Alcoholinum Aconiti.—This is prepared by distilling, at a low temperature, the spirit from the tincture, until the consistence of an extract has been obtained. The process should be completed in a vapor bath.

Its color is dark brown, or almost black; it has an agreeable smell, and bitter taste. The dose is one-third of a grain, thrice daily, commencing with one sixth of a grain.

I prefer the tincture for external administration, from its greater uniformity of action. The method of administering it varies according to the object in view.

As an *anodyne*, *anti-neuralgic*, and *calmative*, five minims ought to be given at first, three times daily, to be increased daily to the extent of one minim each dose, until the physiological effects described under the second degree of operation have been produced.

As an *Antiphlogistic*, five minims ought to be given at first, and repeated in four hours; by which means the second degree of operation will, in all likelihood, have been induced. In order to sustain the sedative action thus developed, two and a half minims are to be given every three or four hours; or less frequently, according to the effect produced.

Where this mode of administration is adopted, it is *absolutely necessary* that the patient should be seen, and his pulse examined, before the exhibition of each dose. When this cannot be done, the remedy may be given in the manner pointed out for its use as an anodyne and calmative.

The *best method* of administering the remedy in *diseases of the heart*, is to give it in smaller doses than those recommended for its use as an anodyne, but more frequently repeated, as three or four minims five times daily.

Sickness may be avoided or checked by an effervescing draught, administered with, or immediately after, the dose.

The long-continued use of Aconite occasionally renders the patient less susceptible of its influence, in which case the dose must be gradually increased.

This very powerful medicine ought to be used with great caution. Like digitalis, it is cumulative in its action, and after a few days of repose exhibits itself in alarming power. In neuralgic affections it is acquiring much celebrity.

Billet-Doux to Baron Liebig.—Letter addressed to Baron Liebig, Professor at the University of Giessen. By MM. Laurent and Gerhardt.—*Monsieur le Baron:* You have just published a brochure, in which you have attacked our labors in the most injurious manner.

You are at liberty, doubtless, to find our labors to be bad, and you may also attack us in a style at which any well bred man would blush; you alone are responsible for your own expressions.

But you have no right to calumniate us; you have no right to designate us forgers, highway robbers, to say, in the face of the world, that in order to refute your theories, to expose your errors, we have deceived the Academy of Sciences, in presenting to that body, on the 22d September last, experiments which do not exist, which we never made.

Were you a Frenchman, Monsieur le Baron, we might call you to account for these calumnies, before the legal tribunals, for those experiments were made in Paris, in the laboratory of M. Pelouze, for the most part in the presence of M. Pelouze, or his pupils, and upon substances furnished by that chemist, and also in Montpelier, in the laboratory of the Faculty of Sciences, partly with materials furnished by M. Pelouze, and partly on products prepared in the latter laboratory, and which were shown to many persons, amongst others to the Dean of the Faculty.

This will serve to show the value of your assertions.

Since your being a foreigner insures you impunity, we have no other resource against you than an appeal to public opinion; we beg you, therefore, Monsieur le Baron, to have the goodness to give our reclamation its right, by retracting your words and to accept our *salutations empressées.*

Aug. Luarent,
Corresponding Member of the Academy of Sciences.
Ch. Gerhardt,
Professor to the Faculty of Sciences, Montpelier.
London Lancet—Med. Ex.

THE WESTERN JOURNAL.

NEW SERIES.—VOL. VI.—NO. IV.

LOUISVILLE, OCTOBER 1, 1846.

EDITORIAL LETTER.

CINCINNATI, Sept. 15, 1846.

TO MY COLLEAGUES—*Gentlemen*:—I fear you will repent of having desired me to send you something for the forthcoming number of our Journal. Not that I am likely to write anything offensive to you or our readers, nor anything injurious to the health of their or your patients, nor anything which, by *warming* up the feelings of either, would add to the intolerable heat of the season; but simply because I have nothing of much importance to say, and shall not, therefore, be able to write anything which can interest our readers.

COUP DE SOLEIL.

Every 'now and then' our newspapers announce a death from 'sun stroke,' but not being 'physician in ordinary' to the 'sovereign' people, I have not had the good fortune to see any of the victims;—in fact, have never yet seen a patient of that class; nor one fatally affected from drinking cold water on a hot day. Why is it that 'our brethren' who are called to such cases do not report them? All our journals abound in 'cases' of disease of daily occurrence, too many

of which present but little that is new; while nothing is rarer than a reported case of sudden death from either of the causes to which I have referred. The close of a long and burning summer seems to be a proper time for presenting this subject to the profession, and I beg leave, therefore, to request such of our readers as have seen cases of the sort to report them, either for the Journal, or as contributions to a work on which I am engaged.

TYPHOID FEVER.

I have lately assisted in the *post-mortem* examination of two patients, who died after several weeks of illness, with symptoms answering very well to Louis' description of Typhoid Fever, and *not* answering to the symptoms which characterize the typhus fevers which I formerly saw prevailing here. Both the patients were men in the earlier periods of middle life, and both were 'new comers' here; reminding one of the class of patients in the practice of Louis. In one, the inflammation of the glands of Peyer extended along the lower five feet of the ilium, and for half that distance towards the cæcum they were in a state of ulceration. The lowest four inches of the small bowels presented ulceration of the intervening mucous membrane as well as of the elliptical patches, and the parietes of the tube were greatly thickened. In the other case, this thickening did not take place, and the consequence was the sudden death of the patient, after the fever had nearly ceased and he seemed to be convalescent. His physician, one of my friends, left him in the evening with a pulse at 72, but soon after reaching home was recalled. The patient had been suddenly seized with extreme pain just above the symphysis pubis. As yet his pulse was not much affected, but by morning it had become small, weak, and frequent, and his skin was covered with a clammy sweat. I saw him in the afternoon, when his abdomen was slightly tympanitic, his pulse thready, his countenance Hippocratic, and he was ejecting fluids from his stomach, by a kind of hiccup, or paroxysmal regurgitation, precisely similar to that which brings up the fatal black vomit of yellow fever. At two o'clock the next morning he expired. On opening the abdomen, a quantity of serum and lymph, colored with feculent matter, was found in the right iliac region and pelvis. The omentum was engorged and cemented to the intestines, which were covered with soft

membraniform lymph. On further examination we found a circular perforation of the ilium, large enough to receive the quill with which I am writing, about two feet above the ilio-cæcal valve. It had occurred in the centre of an ulcerated elliptical plate, and not the least effort had been made by the *vis medicatrix* to thicken or sustain the peritoneum, at that point. It did not even present any hyperæmia. A number of the glands of Peyer were inflamed, and several of them ulcerated; but the lesions were not of such extent but that the patient might have recovered, had not the perforation led to a suddenly fatal peritonitis. It is worthy of record, that the attending and consulting physicians of this patient, both highly intelligent and respectable members of the profession, suspecting, from the general symptoms, an affection of the glands of the ilium, had made repeated examination of the ilio-cæcal region, and the patient always answered that there was neither pain nor tenderness. It is also deserving of record that in our post-mortem examination of the other patient, in whom so much ulceration existed, extending, as I may here add, into the cæcum and colon, we found, in the intestines, the usual quantity of healthy fæces. The two facts taken together show, that absence of pain and soreness under pressure and the presence of healthy alvine discharges, may coexist with fatal lesion of the glands of Peyer; and that the diagnosis of such cases, is, therefore, of a very doubtful and uncertain kind. How many other cases of the same sort with these have occurred in the 'Queen City' this summer, I cannot say; but, from what I have heard, I suppose there have been several. Indeed, just before the death of these patients, I was called into consultation, by one of our most promising young physicians over a gentleman, of nearly the same age with the other two, who had manifest symptoms of an acute *typhoid* fever, with decided, even peritoneal affection, of the right iliac region. The early loss of fifty ounces of blood, which was buffy, arrested the disease. This fever I suppose to be of the same kind with that which has prevailed, more or less, for several years past in the interior and oldest settled parts of Kentucky; and may be among our *increasing* diseases. If so, it is entitled to great attention;—just as an invading army should be more vigilantly watched than one which is retreating. If, with the 'progress of years,' typhoid fever should replace our autumnal remittents, we should not, I fancy, gain very much by the change. I wish it were possible, (in a successful and pointed manner,) to direct the attention

of our readers upon this form of fever; and especially upon its connexions with autumnal fever, which seems frequently to modify, and be modified by it. Can any one tell whether those cases of remittent bilious fever, which, in their latter stages, exhibit typhoid symptoms, are accompanied by lesions of the ilium?

THE SUMMER.

It should be recorded that the present summer has been one of unusual heat and rain. I say *present*, for although it is now the middle of the first month of autumn, the thermometer still rises to 85° and 88°, and even 92°. Thus the heat has not only been intense, but protracted. Howbeit, so frequent and copious have been the showers, that the 15th of September never before presented the forests which overshadow the hilly ramparts of the Ohio in deeper and healthier green. In fact, the frequent falls of rain have counteracted the fervent heat—fruits of all kinds have been abundant, and the withering effects of drought are nowhere to be seen. In the diseases of the city and surrounding country, there has not, as far as I know, been anything remarkable.

QUACKERY.

The Queen City seems to have prostituted herself to the foul embraces of empiricism. Behold the gorgeous and glittering TEMPLE OF QUACKERY. On its dome there sports a gigantic black snake, fit emblem of cunning; and a silly coot (still fitter emblem of credulity,) is fluttering into the opening jaws of the wily fascinator. Let us enter the upper halls of the mansion of imposture.

Turn to the east; there is the den of the *'Reformed Medical College of Ohio,'* where doctors are manufactured out of the *raw* material. (N. B. The wool may be either coarse or fine, black, white or grey: the rolls warranted equally good and of the same size.) Now turn to the west; there is the den of the rival *"Eclectic Medical Institute,"* whose lathe can *turn* dunces into doctors, and not destroy the natural grain of the wood! The worthies who labor in these precious estalishments agree in one thing only, that of slandering the regular profession; beyond this, they show their impartiality by villifying, that is, telling the truth on, each other. I am meditating a plan by which to give a new impulse to their honorable emulation.

It is my good fortune to possess the only copy, in America, of a rare book of 1200 pages, published in London, in 1693, under the following comprehensive title:

"*Seplasium: the Complete English Physician; or, the Druggist's Shop opened. Explicating all the particulars of which medicines at this day are composed and made. Showing their various names and natures, their several virtues, preparations, uses and doses, as they are applicable to the whole art of physic, and containing above six hundred chemical processes. A work of exceeding use to all sorts of men, of what quality or profession soever; the like not hitherto extant. In ten books.* By WILLIAM SALMON, Professor of Physic, near Holburn Bridge, London. *Multa multuraque.*"

Now, the possession of this scarce and extraordinary work, by either the Reformed College, or the Eclectic Institute, would at once establish its supremacy over the other; and I hereby offer it as a premium to the one which can in the shortest time transform a hostler into a doctor; the prize to be adjudged by a committee of *gentlemen.*

Let us descend to another floor of the temple. Here, in an out-of-the-way corner, is the STEAMERY. But how deserted! Its fires are smouldering, and the distillery of 'No. 6' dribbles only *guttatim;* and yet the supply is equal to the demand. Compelling a sick girl to drink a quart of lobelia and then a gill of the tincture of red pepper, in a single night, while lying surrounded with ears of boiled corn, and winding up in the morning with a dose of 'No. 3,' is no longer the fashion: such methods of curing an inflammation of the brain or stomach are now condemned by the Court of Empiricism; and it has been discovered that a very different plan should be pursued. Let us enter the magazine where the new munitions are elaborated. But hold! We can't get in! It's a mere closet, with tiny boxes, and pills of the size of a millet seed at the end of a dry summer. A millionth of a grain of the extract of aconitum napellus in each box! A tenth of the ten millionth of a drop of the juice of atropa belladonna in that little vial. One pill in the morning, and one drop of the solution at night! No more steam polypharmacy! No more drenching, stuffing, and pistoning with herbs and roots. *That* was all very *vulgar—this* is very *refined:* suited to the character and constitutions of ladies and gentlemen—the learned and intellectual—above all, to the convenience of clergymen and pious ladies—whose pocket magazines will enable them to dispense

to the poor, and to such of the rich as may be ashamed to visit the temple of quackery. Thus will the blessings of HOMŒOPATHY, like honey dew, fall equally on the leaves of the towering yellow poplar —*softest* of trees, and the humble elder—*greenest* of shrubs.

But let us pass on to another kennel. Its walls and ceiling and floor are wet and cold; but don't feel afraid to enter. You may have pleurisy, or rheumatism, or consumption; but "never mind"—sit down and receive the cold douche, or lie down and wrap yourself in the cold and dripping sheet. 'Steam' and hot 'chunks' *used* to be the *proper* remedies, but the college of quacks has made a new degree. In the days of Moliere, it could only transfer the liver from the right side to the left. Send round the book of HYDROPATHY. Let your friends be warned against all family physicians—all regular doctors, with their pedantic prescriptions and long bills! Be equally on your guard against homœopathy. Rely on water only and alone. Nothing can live *without* water—and nothing can die *with* it.

But we must move on to the next kennel, and a very genteel and quiet place it is. Look at the simplicity of its furniture—a chair and sofa. No steam baths—no cold water baths—no bundles of leaves and bark—no jugs of 'No. 6;' not even the miniature vials of homœopathic elixir, are allowed to profane the mysterious dormitory! Its very air is etherial—its light magnetic; and spiritualities gambol in the beams like gnats in the purple rays of the setting sun. All is intellectual and sublime. But let us come to the work. The necromancer takes his chair; the necromancee her sofa—their eyes meet each other,—he darts a magnetic glance—her eye-lids fall,—a quiver agitates her lips, and she softly reclines, in sleep of body but not of mind. 'A change has come o'er the spirit of her dream.' Her soul, disengaged from its frail tenement of clay, explores the caverns of the earth, and the lowest pools of the great deep; descends into hell, then rises to heaven; and, bringing tidings from both to him who thus set her free, is prepared, at his bidding, to enter the foul abodes of disease in the bodies of foul men, inspect the foul organs, with prying eyes, and report to her master the hidden cause of every foul infirmity. The patient thus inspected may now be placed under treatment. Put him on the sofa—let the doctor point his finger to the disordered organ—keep quiet till he gives the healing glance, and all will then be well. But we must not linger in this spiritual saloon, when so many *spirituous* kennels remain unexplored in the

basement below. See how the *dogeries* are ranged around—lighted only by lamps—and labelled over every door 'No Admittance.' These are the secret vaults. What strong odors fill the air. Look at the inscriptions of the different doors:—"Challenge to the World!—*Dr. Cullen's Indian Vegetable Panacea.*" "The great Medicine of the day—*Dr. Swayne's Compound Syrup of Wild Cherry.*." "Coons! Coons! Coons!—*McKenzie's Corn Destroyer.*" "All opposition vain—*Bristol's Compound Syrup of Sarsaparilla.*" "Great cure for Consumption—*Dr. Duncan's Expectorant Remedy.*" "By the Queen's Patent—*Triumphant Success of Buchan's Hungarian Balsam of Life.*" "New Discovery —*Zanone's Hair Powder.*" "*Jayne's Life Preservative and Expectorant.*" "Fever and Ague, Chill Fever, Dumb Ague, Intermittent and Remittent Fevers, and all the various forms of Bilious Diseases speedily and thoroughly cured, *by Dr. Osgood's India Cholagogue!!*" "Salter's Ginseng Panacea—*The great remedy for Coughs, Colds, Influenza, Bronchitis, Asthma, Consumption, Pain in the Side and Breast, and all other Affections of the Lungs.* Approved by the Faculty of three Continents." Reference to twenty-seven gentlemen and ladies in Cincinnati, including "Dr. Drake!"

But what means the sign over that retired and central cell? A quill from the wing of a crow—cunningest and blackest of birds! Let us peep through the key-hole. Ah! there sits the scholar of all the subterranean kennels. See how nimbly his fingers move, and look at the sibylline leaves as they fall from his pen—infallible boluses—dulcified panaceas—tasteless catholicons—warranted specifics—renowned, restorative regenerators—reproducers of teeth in old age—universal resuscitators from every kind of apparent death! All attested and dignified by the names of eminent physicians and surgeons, now in their graves—Hunter, Cullen, Buchan, Wistar and Rush. And look at the blank certificates, ready to be filled up with spurious or forged names, by the manufacturers in the surrounding kennels! A discount to those who purchase by the ream; and no additional charge for filling up, to those inventors who do not know how to read and write.

Such, gentlemen, is a hasty sketch of the Temple of Quackery, which graces the Queen City. If its priests who minister at its altar are many, its votaries 'may be called legion.' They are no longer

the uneducated and vulgar, but contrariwise, the cultivated, affluent and refined. In the midst of the attendance of well qualified and respectable physicians, both gentlemen and ladies have the nostrums of quacks smuggled into their apartments. Invalids have their carriages stopped half a square from the door of an empiric, and sneak to it on foot, lest some one (who is perhaps at the same time under the care of another quack) should chance to see them. Many, however, have grown quite shameless, and avow their preference of empiricism over science. Its harvest is undoubtedly very great; for those who follow it grow rich, while many deserving physicians 'live but from hand to mouth;' and others, too proud to grapple with knaves and impostors for the patronage of an *enlightened* community, are retiring to the country, and intend to give up physic for farming.

When I began this epistle I thought of some other matters on which I might say a little, but as you are undoubtedly tired, and "so am I," they will be kept back for another letter, till when,

I remain your obedient servant,

DANIEL DRAKE.

DR. HARRIS'S CIRCULAR LETTER.

We take great pleasure in making room for the following circular addressed to his brethren by Dr. Harris, whose zeal in advancing his profession is worthy of all praise:—

BALTIMORE, August 22, 1846.

DEAR SIR—The undersigned is engaged in preparing for publication a *Dictionary of Dental Science*, a work which is evidently much needed, and which he hopes to present in such a form as will commend it to the general use of the profession.

In the hope of eliciting information of an important character which your observation and experience may enable you to give, and with a desire to furnish you with an opportunity to make known any improvement in the dental art or discoveries in dental science, made either by yourself, or by others known to you, which have not yet been promulgated, the undersigned respectfully solicits an early answer to the following queries:

First. Have you knowledge of any deceased dentist or dentists,

whose contributions to dental literature, superior skill, or remarkable character, entitle him or them to biographical notice in such a work as the one proposed? If so, the undersigned would be glad to have names and such items of history as your judgment may select. If your information concerning them will enable you to do so, state when and where they were born; the character of their early pursuits, the extent of their education, with whom they studied and served their professional apprenticeship; when they commenced practice; their skill in the several branches of the dental art, the improvements they made either in theory or practice, or in dental instruments; their contributions to the literature of dental science, the place or places where they practised; their standing in society, and when and where they died, with the diseases which caused their deaths.

Second. Have you invented any dental instrument or appliance of any kind, which upon full trial you consider valuable to the profession? If so, please describe it.

Third. Have you improved any instrument previously known? If so, please transmit a description of it.

Fourth. Have you performed any remarkable or extraordinary operation upon the mouth? If so, describe it, pointing out any particulars which entitle you to the award of originality in conception, or superior dexterity in operating. Do not confine your answer to operations on the teeth, but include the whole buccal cavity.

Fifth. Do you know of any such operation performed by any other than yourself, not yet reported?

Sixth. Have you met with any remarkable cases of disease or deformity of the organs in question? If so, describe them, with the mode of treatment adopted, and any other information with regard to them.

Seventh. Have you remarked serious results from the use of unscientific preparations, awkward operations? &c., &c.

Eighth. Have you made observations which you think valuable upon the causes of dental disease, and their prevention? If so, please transmit them in such form as you may think proper.

It would be very desirable, if you could do so conveniently, to accompany any description, which you may have the kindness to furnish, of any newly invented instrument or appliance, or of any improvement on any previously in use, with an accurate drawing.

By answering the above queries or any of them, you will confer a

favor on the undersigned, and may render valuable service to science. Very respectfully, &c., &c.,

CHAPIN A. HARRIS.

CIRCULAR OF THE NATIONAL INSTITUTE.

The following circular of the National Institute at Washington ought to elicit valuable information, and we do what we can to give it publicity:

BALTIMORE, 20th July, 1846.

SIR:—The Medical Department of the National Institute at Washington directed a committee of its members to institute an inquiry into the sanatory condition of the United States, and report the result of its labors to that body. In order to facilitate this important enquiry, you will greatly oblige the committee by an answer to the following enquiries:

1st. What is the medical topography of your district, and the influence of its soil and climate over health and disease?

2d. What has been the effect of agriculture, the clearing of forests, and the draining of soils, upon the climate and health of the inhabitants?

3d. What manufactories or large towns are there in your district, and what is their effect over the health of those exposed to their influence?

4th. What evils operate in the towns requiring municipal interference? Are they deficient in a supply of water, drainage, or cleanliness, and how remedied?

5th. In towns what amount of population, and what provision for public squares?

6th. What epidemic or endemic diseases have you observed, and to what cause are they to be attributed?

7th. What is the annual number of deaths, births, and marriages to each thousand of your population? Transmit your bills of mortality, if any.

8th. Are there any remarkable instances of longevity, and what is their age, and mode of life?

9th. Are there any retreats peculiarly favorable to invalids affected with pulmonary complaints, or any medical springs, and their qualities and effects?

Be pleasedto prepare your reply in such form as you desire it to be printed in the committee's report, and direct it to the undersigned, under cover from your member of Congress. Your immediate attention is requested. Respectfully, your obedient servant,

JAMES WYNNE, M. D., Chairman Committee.

Prof. SEWELL, of Columbia College; Prof. THOMAS, do. do.; Dr. BUCK, U. S. Army; Dr. WASHINGTON, U. S. Navy; Dr. WYSE, members of the committee.

FACTS FROM CORRESPONDENTS.

TREATMENT OF LEUCORRHŒA.

Dr. Osborne, of Erie, Alabama, has found the following treatment of *Leucorrhœa* uniformly successful:

To 2 ounces of a decoction of red oak bark add 10 drops of the tincture of muriate of iron, and inject into the vagina two or three times daily. I am apprized of the incompatibility of the two articles, but my experience is that they form a compound which acts like a specific in this troublesome affection. I cannot help regarding the remedy as one entitled to the confidence of the profession.

Erie, Ala., August, 1846.

ELECTRO-MAGNETISM IN INTERMITTENT FEVER.

An esteemed correspondent, to whom we have heretofore been indebted for interesting facts, communicates the following cases of intermittent fever cured by electro-magnetism:

I had been laboring under intermittent fever from August, 1845, until April, 1846. Several of the best physicians had been consulted without benefit. Quinine, the usual remedy, seemed to have lost its effect; the chill frequently returning in three or four days after its suppression. In April, being at Louisville on business, the weather suddenly turned cold with rain, and immediately I began to experience the peculiar nervous depression, which every one similarly situated feels in such weather, and, calling on a medical friend, we amused ourselves some time in his office with an electro-magnetic battery. Immediately I found myself free from all nervous debility, and felt nothing of the kind for some hours. On my return, in reflecting on the circumstance, I determined on the next occasion of the paroxysm to test the efficacy of a battery at home. In a few days the opportunity was afforded, and the chill was completely arrested in six

minutes; and even after the nails were blue and the hands cold above the wrists. I have had no chill since, and have taken no quinine.

Some time after this, Mr. B., who had been laboring under intermittent fever for the last three months, called on me. The usual remedies had been prescribed without effect; the chills continued to return at short intervals, and when I saw him he had had a return each day for more than a week. I administered a cathartic of blue mass and compound extract of colocynth, but from some cause without effect; and expecting a chill next morning, I placed him under the influence of the battery, and the time passed by without any chill, though some evidences of its approach were apparent.

In my own case, the biliary organs were in good condition, and the paroxysm seemed to recur more in virtue of habit than otherwise; but in the case of Mr. B. the liver and spleen were both evidently and badly deranged.

Do not these cases authorize us to expect something from electricity in protracted intermittents? In recent cases the remedy would not seem to me to promise so much. I hope physicians will give it a trial in some of their obstinate cases, and communicate their experience to the public.

Shelbyville, Ky., September, 1846.

TO THE SUBSCRIBERS OF THE LOUISVILLE JOURNAL OF MEDICINE AND SURGERY.

On looking over the subscription books of this publication, we find that many of the subscribers are in arrears, and some of them very largely. As this is the harvest time of doctors in the West and South, there could not be a better occasion to ask them to remit. Come, gentlemen, a goodly harvest you have had of chills and fevers, congestions and ague-cakes, pay us who cater for your instruction. Come, it's just as easy as to thrust a lancet into a tumor, nothing more than to enclose $5, $10, $20, $30, or $35, as the case may be. Come, you have the reputation of mosquitoes for thrusting your bills into other people's faces—pay your own.

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